Final Examinations 2020



1 Cairo Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The image can be received on a screen is called .... image.
2. At the end of ...., the nucleolus and the nuclear membrane disappear at the mitotic division.
3. The sun takes about 220 million years to complete one cycle around the center of ....
4. The chromosome consists of two connected threads at the .... , each is called ....

B What is meant by ... ?

1. The light reflection phenomenon.
2. Average speed.
3. Reproduction.

C A train starts to move from rest in straight line, its speed reaches 36 m/sec. after 9 second. **Calculate** the acceleration of the train, and **find its type**.

Question 2

A Choose the correct answer :

1. Bread mold fungus reproduces asexually by ....
   a. regeneration b. binary fission c. budding d. sporogony
2. The two gases that have produced galaxies, stars and the universe over millions of years are ....
   a. Helium and Oxygen b. Helium and Nitrogen
   c. Helium and Hydrogen d. Oxygen and Hydrogen
3. The virtual-upright magnified image formed in case of ....
   a. concave lens b. convex mirror
   c. plane mirror d. concave mirror and convex lens.
4. The distance moved through a unit time is ....
   a. acceleration b. displacement c. length d. speed
5. The crossing over phenomenon occurs at the end of ....
   a. prophase I b. metaphase I c. anaphase I d. telophase I

B **Mention the type of physical quantity of each :**

1. Mass.
2. Force.

C **Illustrate with drawing** the image formed by concave mirror when the object is at the center of curvature of the mirror, then mention the properties of this image ?

Question 3

A **Re-write the following statements after correcting the underlined word :**

1. When an object move by **relative speed** it cover equal distances in equal periods of time.
2. The solar system consists of the sun and **seven** planets that rotate around it.
3. The number of chromosomes in the human somatic cell is about **a quarter** of those in gametes.
4. The scientist **Fred Hoyle** established the theory of nebula to explain the origin of solar system.
5. The short-sightedness is treated by using a **convex lens**.
6. **Regular speed** is the value of displacement in one second.

B **What would happen in the following cases :**

1. Combination of the male gamete and female gamete.
2. The incident light ray falls passing the focus of the convex lens.

C **Give reasons for :**

1. The long-sightedness person can't see the near objects clearly.
2. The focal length of concave mirror can be determined by knowing its radius of curvature.

Question 4

A **Write the scientific term for the following statements :**

1. The covered distance at certain direction.
2. The value of change of an object's speed in one second.
3. The angle between the reflected light ray and the perpendicular line on the reflecting surface from the point of incidence.
4. The ability of some animals to compensate their missing parts.
5. Physical quantity which has magnitude only and has no direction.
6. Change of an objects position as time passes according to the position of another object.

B **Compare between each of the following :**

1. Acceleration and deceleration.
2. Somatic cells and reproductive cells (in terms of its types of the cell division).

2 Giza Governorate

Answer the following questions :

Question 1

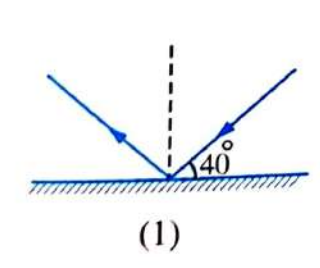
A Choose the correct answer :

1. Which of the following are consider from vector physical quantities ? ....
   a. mass and force
   b. displacement an acceleration
   c. radius and distance
   d. force and time
2. The object's image that formed behind plane mirror always is ....
   a. virtual, magnified and erect
   b. real, diminished and inverted
   c. real, equal to the body and reversed
   d. virtual, equal to the body and erect
3. The scientist who established the modern theory of origin the solar system is ....
   a. Fred Hoyle b. Laplace c. Moulten d. Newton
4. Chromosome is chemically consists of nucleic acid .... and protein.
   a. HNO_3 b. H_2SO_4 c. DNA d. HCl

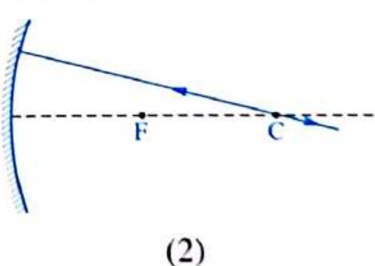
B A racer cover a distance (50 meter) by running within a time (5 second), then return to the start point walking within (20 second). Calculate average speed of the racer :

1. While running
2. While returning back.

C Calculate the value of reflecting angle in both the two figures :



(1)



(2)

Question 2

A Complete the following statement :

1. When object speed decreases by passing time, then it moves at .... acceleration.
2. If the focal length of a convex mirror is (10 cm), then its radius of curvature of its reflecting surface equal ....
3. Distance in space is measured by .... unit.
4. The .... division occurs in liver cells.

B An object is placed at (3 cm) from the optical centre of a lens, then a magnified virtual image for the object is formed :

1. Mention the type of lens.
2. Explain by drawing the path of the rays that form the object's image.

C What happen :

1. When combination of male gamete with female gamete to form zygote.
2. To the acceleration of an object moves at uniform speed.

Question 3

A Write scientific term for the following statements :

1. The distance covered at a certain direction from the primary position of movement towards its final position.
2. The distance between principle focus and optical centre of the lens.
3. The process of exchanging the two inner parts of chromatids of each tetrad.
4. It is the wide and extended space that contains galaxies.

B Compare between each of the following :

1. Speed – velocity (according definition).
2. Amoeba and yeast fungus (according to the type of asexual reproduction).

C What is the name of the phase where the following changes occurs during cell division :

1. Chromosomes are arranged along the equator of the cell.
2. Doubling the genetic material.

Question 4

A Correct the underline words :

1. For identifying force it is necessary to know its **magnitude only**.
2. Lens is transparent medium that **reflect** light and it is limited with two spherical surface.
3. The **Big Bang** theory depends on the presence of something that looks like cloud or nebula in space.
4. Gamete contain **diploid** number of chromosomes.

B Give reasons for :

1. The train moves with an irregular speed.
2. Sexual reproduction is a source of the variation between individual.

C What is meant by ... ?

1. The relative speed of car relative to a moving observer equals zero.
2. Meiosis division is a reduction division.

3 Alexandria Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The actual length of the path that a moving object takes from the starting point of movement to the end point is known as .... and it is considered as .... physical quantity.
2. The image always equals the object and can't be formed on a screen in the .... mirror.
3. In case of the .... division of the cells no changing in the genetic traits.

B A runner covered a distance of 240 meters in 16 seconds, then he returned back walking to the start point in 2 minutes. Calculate the average speed of his complete trip.

C Define the following :

1. The universe.
2. Reproducing by regeneration.

Question 2

A Choose the correct answer :

1. The graphic relationship between distance and time which is represented by a straight line pass by the origin point is ....
   a. irregular speed
   b. uniform speed
   c. irregular acceleration
   d. uniform acceleration
2. From physical quantities that is enough to be identified knowing its magnitude only is ....
   a. the force
   b. the displacement
   c. the acceleration
   d. the mass
3. The formed image of an object in the concave lens at any distance is ....
   a. virtual diminished
   b. virtual enlarged
   c. real diminished
   d. real enlarged
4. According to Laplace theory in 1796, the solar system was a glowing gaseous sphere known as ....
   a. the sun
   b. the planets
   c. the stars
   d. the nebula
5. It is possible to produce new plants identical to the mother plant by ....
   a. forming gametes
   b. fertilization
   c. budding
   d. tissue culture

B Give reasons for the following :

1. The word Ambulance is written laterally inverted on Ambulance car.
2. Binary fission is considered as a mitotic division.

C What is the measuring unit of the displacement ?



Question 3

A Write scientific term for the following statements :

1. The speed of a moving object relative to a standing or a moving observer.
2. A spherical mirror its shining surface is a part of the outer surface of the sphere.
3. Millions of the stars which arranged in a distinctive shape.
4. Special organs for reproduction in algae and fungi.

B When do the following happen :

1. Passing of a light ray through a lens without refraction.
2. Moving of an object with a negative uniform acceleration.

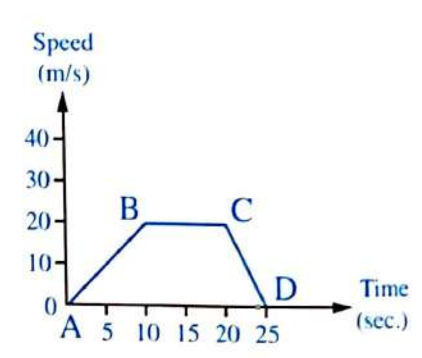
C 1. Illustrate how the real equal image of an object is formed in the mirrors.

2. The opposite figure shows a phenomenon happens in the living organisms, **mention :**
   a. The name of the phenomenon.
   b. The name of the phase in which the phenomenon occurs.



Question 4

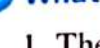
A The opposite graph represents the movement of a car from rest point, study the graph and answer :



1. Moving with uniform acceleration is represented by the straight line ....
2. Calculate the acceleration of the car during its movement from the point (B) to (C).

B Compare between short-sightedness and long-sightedness concerning :

1. The radius of the eyeball.
2. The type of lens that is used in treatment.



C What is the importance of the following :

1. The attraction force of the Sun.
2. The nucleic acid in the chromosome structure.
3. The anther in the flowering plants.

4 Kalyoubia Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. The convex lens which has great thickness from the following, its focal length is ....
   a. 4 cm b. 6 cm c. 8 cm d. 10 cm
2. The binary fission reproduction takes place in ....
   a. Amoeba and Hydra b. yeast and bacteria
   c. Amoeba and sponge d. Bacteria and Euglena
3. The two gases which present within minutes of Big Bang are ....
   a. Hydrogen and helium b. Hydrogen and oxygen
   c. oxygen and Helium d. Hydrogen and nitrogen
4. From the scalar physical quantities ....
   a. radius and area b. time and force
   c. acceleration and speed d. mass and displacement
5. Which of the following organs show the right number of chromosomes ?

The choice	a.	b.	c.	d.
The organ	liver	testes	uterus	ovaries
Its cells has (2n)	✓	×	×	✓
Produce cells has (n)	✓	✓	×	✓

B What are the results which happens due to the following .... ?

1. A nuclear explosion for a star near the sun (according to Fred Hoyle theory)
2. A starfish loses one of its arms which has a part of the central disc.
3. Putting an object in front of convex lens at its focus.

C Study the following figure which explains the steps of one of the biological phenomenon, then answer the following questions :

1. What's the name of this phenomenon ?
2. Mention the phase in which that phenomenon occurs.
3. What is the type of its division ?
4. What are the results which are produced if that phenomenon did not happen ?

Question 2

A Write the scientific term of each statement from the following :

1. Asexual reproduction occurs by different parts of the plant without needing seeds.
2. The actual length of the path that a moving object covers from the starting point to the ending point.
3. Arrangement, harmony and distinctive shapes of the groups of stars in the universe.
4. Thread like bodies present in the cell's nuclei and they represent the genetic material of the living organism.
5. An optical piece that is used to treat a vision defect which causes the formation of image in front of the retina.

B Two cars start their movement on an inclined road at the same moment, the first car rises up the inclined road with regular speed equal 30 m/sec. and the second car moves down the inclined road with initial speed equal 10 m/sec, and uniform acceleration of 5 m/sec^2. If the two cars meet each other after 5 seconds passes from that moment find the relative speed of the first car that is observed by the driver of the second car when meeting of the two cars.

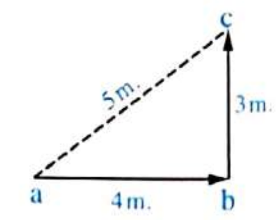
C When will the following things happen ... ?

1. The distance covered by a body equals the amount of its displacement.
2. Reflection of light ray falls on spherical mirror on itself.

Question 3

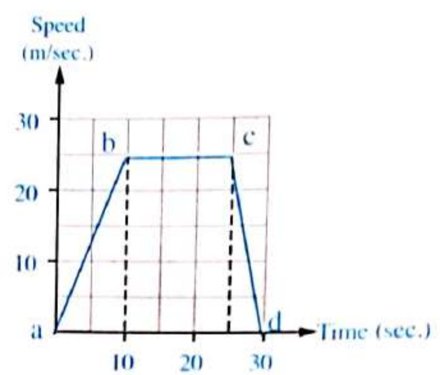
A Rewrite the following statements after correcting the underline word :

1. If the angle between the incident light ray and the reflecting surface equal 30°, so the angle of reflection equal **30°**.
2. In the opposite figure an object moves Eastward from point (a) to point (b) during two seconds, then to point (c) Northward in 3 seconds, so its velocity through that period is **1.4 m/sec.**



3. Yeast fungus reproduces asexually by **regeneration**.
4. An object moves in a circular path its radius (r) to cover a distance equal (πr), so its displacement equal **2 πr**.
5. When the object covers the double of distance at the same time, so its speed **decreases to quarter**.

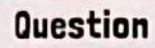
B A car moves in straight line, and its speed recorded within 30 seconds, then it was represented graphically as shown in the opposite figure :
From the graph extracts the needed information to complete the following table :



Phases of the car movement	phase a b	phase b c	phase c d
The initial speed (V_1)	.... (1)	25 m/sec	.... (2) ....
The value of acceleration	2.5 m/sec^2	.... (3)	.... (4) ....
The description of movement	.... (5)	.... (6)	The car moves with negative acceleration

C Mention one difference between each of the following :

1. Regular speed and irregular speed.
2. The virtual image of an object which is formed by each of concave lens, and convex lens.

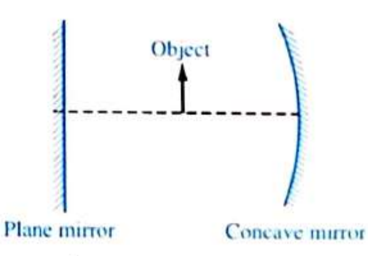
Question 4

A Give reasons for each of the following :

1. Pilots take in consideration the velocity of the wind during flying.
2. The mitotic division is very important for the child's body and not the meiotic division.
3. The universe is in a continuous expansion.
4. Most of people can't write in a correct way, while they are seeing the paper through a plane mirror.
5. The reproduction by spores is one of the forms of asexual reproduction.

B In the opposite figure :

An object was put in the mid distance between a concave mirror (its focal length is 10 cm) and a plane mirror, so the image was formed by the plane mirror at a distance 30 cm from the plane mirror.



1. Draw the path of light rays for the formed image by the concave mirror.
2. Mention the properties of the formed image by using the concave mirror.

C Mention the name of the phase in which the following changes occur during the cell division :

1. At its end the nucleolus and nuclear membrane disappear.
2. Two identical and separated groups of chromatids are formed.



5 Menofia Governorate

Answer the following questions :

Question 1

A Write the scientific term for each :

1. The upright image that cannot be received on a screen .
2. A straight line that passes through the center of curvature of a mirror and its pole.
3. A phase of division during which the cell prepare itself by duplicating its genetic matter.
4. An optical piece thick at its middle and thin at the terminals.
5. A type of reproduction depends on one parent without production of gametes.

B Give reasons for :

1. The body that moves by uniform velocity has acceleration equal zero.
2. Sexual reproduction produces individuals different of their parents.
3. The gamete contains half number of chromosomes existed in the somatic cell.

C A body moves with constant velocity covering 300 meters in 10 seconds then it returns back to the start point during 50 seconds, calculate :

1. The average speed of the body during return back only.
2. The average speed of the body during going and returning together.



Question 2

A What is meant by each :-

1. The distance between pole of a spherical mirror and its primary focus is 10 cm.
2. The distance covered in fixed direction equal 100 m.

B What happened when a starfish loses an arm with a part of central disc.

C Compare between each :-

1. The acceleration and the mass (in term of type of physical quantity).
2. Bread mold fungus and Sponge (in term of the way of reproduction)
3. Big Bang theory and nebular theory (in term of their importance).
4. A train covers 72 kilometers in an hour and a car covers 30 meters in one second (in term of the magnitude of the speed)
5. Mitotic division and meiotic division (in term of the cells in which they occur).

D An object placed at a distance of 15 Cm of the optical center of a symmetric convex lens, a real minimized image is formed for the object. then when the object is moved 5 Cm towards the lens, a real image equal to the object is formed, determine :

1. The focal length of the lens.
2. Draw only the path of rays that explain the object and its image when it placed at a distance 15 cm of the lens optical center ?

Question 3

A What is the role of the following :

1. The spindle fiber during cell division.
2. The chromosome

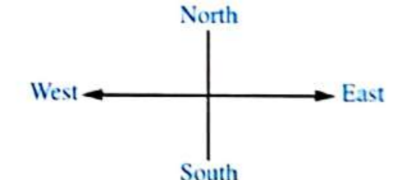
B Determine the type of the optical piece (lens or mirror) then mention its type (concave – convex – Plane) when it is able to :

1. Form a virtual upright minimized image in the same side of the object, whatever its distance of it.
2. Form a virtual upright enlarged image on the other side of the object, only if the object placed at a distance less than its focal length.

C Complete the following by suitable words :

1. The scientist who establish the crossing star theory that explains the origin of the solar system is ....
2. The ability of the liver to regenerate under certain conditions if injured represents the scientific base for .... surgery.
3. .... phenomenon is occurred between the inner chromatids of the tetrad.
4. The device that is used by the astronomers to identify the different wave lengths emitted by the Sun is ....

D A person moved from start point (12) meters to the west then he returned in the same path 8 meters to the east calculate :



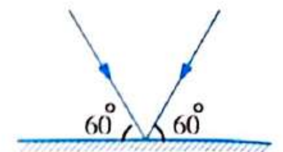
1. The distance covered by the object from the start point.
2. The displacement (magnitude and direction).

Question 4

A Choose the correct answer :

1. When a car moves by positive uniform acceleration of (6 m/sec^2) this means ....
   a. The car speed increases by the rate of (6 m/sec) every second.
   b. The car speed decreases by the rate of (6 m/sec) every second.
   c. The car covers 6 meters each second.
   d. The car acceleration increases by the rate of (6 m/sec^2) every second.

2. When incident light ray falls on a surface of a plane mirror then reflected as in the figure the reflecting angle equals ....



a. 60°
b. 90°
c. 120°
d. 30

3. If each muscle cell in a male rabbit contains 22 pairs of chromosomes, therefore number of chromosomes in a cell of testis wall equal .... chromosomes.

a. 44
b. 11
c. 22
d. 88

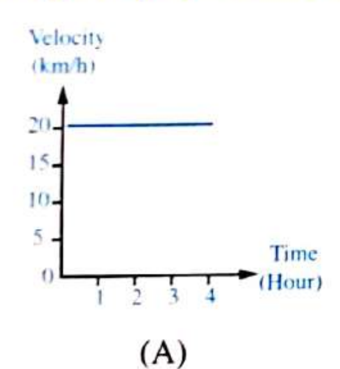
4. The image of near objects is formed behind the retina when these objects are placed in front of the eye of long-sightedness person because ....

a. The more convexity of the eye lens surfaces.
b. The decrease in the eye diameter.
c. The decrease in the focal length of the eye lens.
d. The increase in the eye diameter.

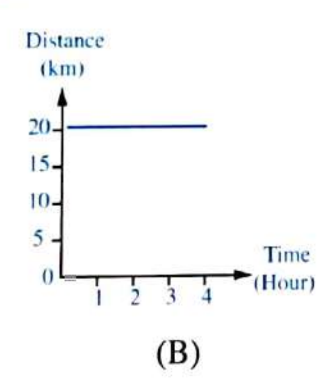
5. According to the nebular theory for the scientist Laplace, the nebula losses its heat gradually with the time which causes ....

a. Decrease in the speed of rotation and increase in the volume.
b. The nebula takes spherical shape with increase its speed.
c. The nebula takes spherical shape only.
d. Decrease in the volume and increase in the rotation speed.

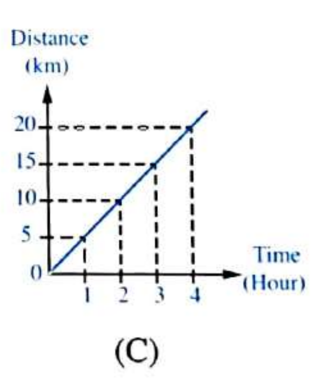
B Three cars (A, B, C) their motion are represented by the following graphs. Study the graphs then answer :



(A)



(B)



(C)

First :

1. The speed of car (A) equals (   ) km/h.
2. The speed of car (B) equals (   ) km/h.
3. The speed of car (C) equals (   ) km/h.

Second :

The relative speed of car (A) to an observer in car (C) when :

1. Both cars (A and C) move in the same direction equals (   ) km/h.
2. Both cars (A and C) move in opposite direction equals (   ) km/h.

6 Dakahlia Governorate

Answer the following questions :

Question 1

A Complete the following statements :

1. As the distance between the planet and the sun increases, the sun's gravitational force .... and its motion around the Sun becomes ....
2. The convex mirror is a part of a sphere, its .... surface is the reflecting surface and in the concave mirror .... surface is the reflecting surface.
3. In the animal cell, the spindle fibers are formed by .... , while in plant cell the spindle fibers are formed from .... at the cell poles.
4. .... reproduction in plant's happens by plant's organs without the need of ....

B 1. Show by drawing the relation (distance – time) graph for an object moves at a uniform speed and then it stops.

2. Sexual reproduction depends on two main processes, what are they ?

C A person can be seen near objects clearly but far objects seem distorted :

1. What is the name of this vision defect and what are its reasons.
2. How can you correct this defect, and give reason for your answer ?

D From the opposite figure calculate :

1. Total distance.
2. Displacement
3. Velocity after the first five seconds.



Question 2

A Correct the underline words :

1. Ahmed takes 10 minutes to transfer from his home to work moving at an average speed of 3 m/s, the distance between home and work **equal 3** km.
2. **The modern theory of the world** explains the origin of the universe.
3. The properties of the formed images by the convex lens depend on **the length** object from the lens.
4. The incident light ray passes through the center of curvature of a concave mirror, it reflects **parallel to its principle axis**.
5. **The focus** is the point lies in the middle of the reflecting surface of the mirror.
6. The relative speed of a moving car relative to constant observer **is less than** its real speed.

B An object was placed at a distance 20 cm from optical center of a lens then a real, diminished image is formed and when the object moves 8 cm toward the lens then a real, equal image to the object is formed :

1. What is the type of the lens and describe it ?
2. Calculate the focal lens of this lens.

C **1. Mention** the general structure of the chromosome, show your answer with drawing and label it.

2. What is meant by :

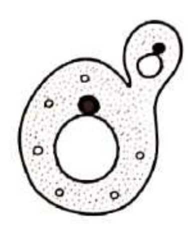
1. Crossing over phenomenon.
2. Contact lens.

D What is the name of each living organism and mention the type of asexual reproduction in each :

1.



2.



Question 3

A Write the scientific term of each of the following :

1. The rate of change of the distance.
2. Groups of stars that rotate together in space by the effect of gravity.
3. The image that cannot be received on a screen.
4. An apparatus is used to see the tiny bodies that cannot be seen by the naked eye.

B Give reasons for :

1. Asexual reproduction keeps genetic structure of the living organism.
2. Concave mirror is used to generate high heat energy.
3. Real image cannot be formed by using a concave lens.
4. The object speed increases by decreasing the time taken to cover a certain distance.

C Compare between each of the following :

Somatic cell and reproductive cell (according to) :

a. Type of division.

b. Number of the produced cell from division of one cell from each one.

D Show with drawing formation enlarged – erect image by using spherical mirror.

Question 4

A Choose the correct answer :

1. .... is a scalar physical quantity.
   a. time of tripe
   b. the force
   c. the pressure
   d. displacement of object
2. Number of chromosomes in sperm is .... number of chromosomes in an ovum.
   a. double
   b. half
   c. equal
   d. quarter
3. The nucleolus and nuclear membrane disappear in ....
   a. metaphase
   b. telophase
   c. prophase
   d. interphase.
4. If you put an object in front of a plane mirror, the ratio between the length of the image and the length of the object is ....
   a. more than one
   b. not equal one
   c. less than one
   d. equal to one

B A car moves by regular speed equals 90 km/h on free road of Banha, then the driver used the brakes the car stops after 10 seconds, calculate the acceleration and what is its type ?

C What is the importance each of the following :

1. Interphase in cell division.
2. Convex mirror in your car.

D Show with drawing, and explain what happen in the following phases :

1. Anaphase
2. Anaphase I

7 Sharkia Governorate

Answer the following questions :

Question 1

A Write the scientific term of each of the following :

1. The value of change in the object speed in one second.
2. A mirror, always forms small image for the object.
3. It contains the Sun and the solar system.
4. The point of connection of two chromatids of the chromosome together.
5. Asexual reproduction occurs by different parts of the plant without seeds.

B Mention the properties of the formed image in each of the following cases :

1. An object is put in front of a convex lens at a distance less than its focal length.
2. An object is put at the focus of a convex lens.

C From the opposite figure :

1. Write the name of this phase ?
2. When does this phase happen ?
3. Why does the cell passes through this phase ?



Question 2

A Complete the following statements :

1. Acceleration is considered one of .... physical quantities, while time is considered one of .... physical quantities.
2. .... and .... are used during wars to follow battle.
3. Long–sightedness caused as a result of .... of the radius of the ball thus the retina is .... to the eye lens.
4. The Big Bang theory explain the origin of .... , while the Nebular theory explain the origin of ....
5. Somatic cells are divided by .... , while reproductive cells are divided by ....

B A moving car by a uniform speed covers 80 meters in 4 seconds, then the driver press the brakes, so it stopped after 4 seconds :

Find : The magnitude of the acceleration :

1. Within 1^{st} 80 meters.
2. After pressing the brakes.

C Mention the name of the phase that indicates the following changes during the cell division :

1. Spindle fibers begin to shrink, so two identical groups of chromatids are formed.
2. At the end of this phase, the nucleoeus and nuclear membrane disappear.
3. It occurs when a complete set of chromosomes that have the same number of the mother cells chromosomes, is formed.

Question 3

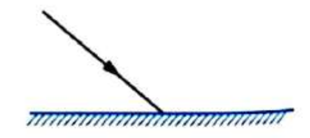
A Choose the correct answer :

1. A student took 10 minute to move from his home to his school moving at average speed 2 m/s, which of the following equals the distance between his home and school ....

   a. 48 m b. 84 m c. 1.2 Km d. 3.6 Km

2. **In the opposite figure :**

   If the angle between the incident ray and the surface of the plane equals 130°, Then the angle of reflection equals to ....

   a. 40° b. 50° c. 90° d. 130°

3. The solar system consists of the Sun and .... plants revolve around it.

a. 7 b. 8 c. 9 d. 10

4. The ratio between the number of chromosomes present in the gametes produced by meiotic cell division to the number of chromosomes present in somatic cell is ....

a. quarter b. double c. third d. half

5. The parental individual disappears when the reproduction occurs in the ....

a. bacteria b. yeast c. bread mould fangus d. mushroom

B The displacement is a vector quantity, which identified by knowing both magnitude and direction. What is meant by :

1. Amount of displacement.
2. Direction of displacement.

C Two cars move in the same direction if the speed of the first car is 30 km/h and the second car is 50 km/h.

Calculate the relative speed of the second car relative to an observer :

1. Standing on the ground.
2. Sitting in the first car.
3. What are you conclude from the resultants ?



Question 4

A Give reasons for :

1. The motion of a train can be considered from examples of motion in one direction.
2. The human being noticed that when he looked at the still water surface, he could see as image of his face in the water.
3. You could see the person who fixes the watches use a magnifier.
4. The constancy of the planets in their orbits around the Sun.
5. The mitosis division is very important for the children.

B Explain how to determine the focal length of a concave mirror (explaining your answer by drawing).

C A body moves in a straight line, and the distances covered in different times is recorded in the opposite table :

The Distance (m)	10	20	30	40	50
The time (s)	5	10	15	20	25

1. Draw the relation between (distance – time) graphically that is obtained from the values shown in the table.
2. Calculate the speed of moving a body.

8 Gharbia Governorate

Answer the following questions :

Question 1

A Complete the following statements :

1. The distance that a moving object covers within a unit time is known as ....
2. The founder of the modern theory is the scientist ....
3. Mitosis occurs in the .... cells of living organisms.
4. Mass is considered from .... physical quantity.
5. The .... image can be received on a screen.

B What is meant by each of the following ... ?

1. The tetrad.
2. The distance between the principal focus of a spherical mirror and its pole = 20 cm.
3. The value of the length of the shortest straight line between two positions = 5 m.

C A train moves at a speed 40 m/sec. and when the brakes is used it moves with a decelerating 2 m/sec^2. **Calculate** the time taken to stop the train.

Question 2

A Choose the correct answer :

1. When an object moves with acceleration equals zero, this means that ....
   a. The object speed is variable.
   b. the object speed is uniform.
   c. the object speed is increasing.
   d. the object speed is decreasing.
2. The crossing over phenomenon takes place at the end of ....
   a. prophase I
   b. metaphase I.
   c. anaphase I.
   d. telophase I.
3. If the speed of a car is 72 km/hour, this means that its speed equals .... m/sec.
   a. 16.
   b. 18.
   c. 20.
   d. 40
4. The scientists believe that the universe emerged from a massive explosion of gaseous ball and it is in ....
   a. continuous contraction.
   b. contraction then expansion.
   c. expansion then contraction.
   d. continuous expansion.
5. A body of length 4 cm is placed at a distance of 8 cm from a convex mirror, so the length of the formed image becomes ....
   a. 16 cm
   b. 8 cm
   c. 4 cm
   d. less than 4 cm

B **What happens in the following cases :**

1. Putting a yeast fungus in a warm sugary solution.
2. A light ray is incident passing through the center of curvature of a concave mirror.
3. Focusing laser on the gold Nano-molecules in the cells infected by cancer.

C **Mention the importance of each of the following :**

1. The centrosome in the animal cell.
2. A convex mirror is put at the left side of the driver of the car.



Question 3

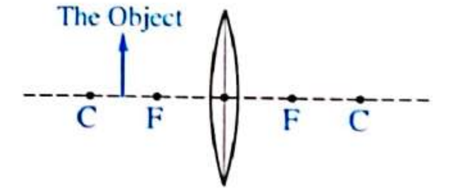
A **Correct the underline words :**

1. A moeba reproduces by **budding**.
2. The speed of car can be identified directly by the **compass**.
3. Contact lenses can stick to **eye iris** and can be removed easily.
4. Sudden violent **chemical** reactions occur with in the star which led to its explosion.
5. **Acceleration** is the actual length of the path that a moving object takes from the starting point of movement to the end point.

B **Give reasons for :**

1. Occurrence of interphase before starting the mitosis division.
2. Pilots take in consideration the velocity of the wind.
3. The moving car with a certain speed seems to be at rest to the moving observer with the same speed and the same direction.

C **Copy the opposite diagram in your answer paper then :**



1. Draw the direction of the rays which form the image of the body.
2. Mention the properties of the formed image.



Question 4

A **Write the scientific term for each of the following :**

1. The point of connection of the two chromatids of the chromosome during the cell division.
2. The change of an object's position as time passes according to the position of another object.
3. The space which contains all the galaxies, stars, planets, moons, living organisms and everything.
4. A point inside the lens that lies on the principal axis in the mid distance between its faces.
5. The value of change of an object's speed in one second.

B Compare between each of the following :

1. Pollen grains and sperms. (according to : site of formation)
2. Average speed and irregular speed. (according to : the definition)
3. Short-sightedness and long-sightedness. (according to : the type of lens which is used to treat each one)

C If the number of chromosomes in a starfish mother cell is (2N), how many chromosomes are there in the cells resulted by regeneration ? Why ?



Answer the following questions :



Question 1

A Complete the following statements :

1. Displacement is considered .... physical quantity, while the mass is considered .... physical quantity.
2. If the fertilized ovum contains 8 pairs of chromosomes this means that the unfertilized ovum contains .... chromosomes.
3. Chemically, the chromosome consists of .... and ....
4. If the speed of a car is 72 Km/hour this means that its speed equal .... m/s.
5. The solar system is located in one of the .... arms of the .... galaxy.
6. Bread mould fungus reproduces asexually by .... , while hydra organism reproduces asexually by ....

B Two cells are divided, one in a female liver and another in her ovary :

Mention :
1. The kind of cell division in each cell.
2. The number of cells produced from each division.
3. The number of chromosomes in each resultant cell.

C Show by labeled drawing only :

1. Formation of the image of a body which is placed between the center of curvature of a concave mirror and its focus.
2. Formation of the image of a body which is placed between the optical center of a convex lens and its focus.



Question 2

A Write the scientific term for each of the following :

1. The value of speed of a moving object relative to constant or moving observer.
2. The continuous separation between galaxies in the universe due to their regular motion.

3. The process of genes exchanging between the two inner chromatids of the tetrad.
4. The image cannot be received on a screen.
5. The part which is responsible for pulling the chromosomes towards the two poles of the cell during anaphase of cell division.

B **Give reasons for :**

1. Mitotic division is important for children.
2. The object that is placed at the focus of a convex lens has no image.
3. The body which moves at a acceleration can't move at a regular speed.

C **From the following figures answer the questions :**

Figure (1)	Figure (2)
Distance (m) / Time (sec.) graph: A, B, C 1. Determine the intervals during which the body moves at uniform speed. 2. The time intervals during which the body at rest.	**- The opposite figure :** Represents a phase of division of a reproductive cell. 1. Mention the name of this phase. 2. What is the type of cellular division it belongs to ? 3. Mention the importance of this type of division.

Question 3

A **Choose the correct answer :**

1. A short sighted person sees the far objects distorted as their image formed ....
   a. on the retina b. behind the retina c. in front of the retina d. in front of the lens
2. Meiotic division in flowering plants occur in the anther to produce ....
   a. Pollen grains b. ova c. sperms d. chromosomes
3. The two factors which can be used to describe the motion of a body are the ....
   a. speed and time b. distance and time
   c. area and time d. displacement and speed
4. The source of stars energy (such as the Sun) is ....
   a. Chemical reactions b. nuclear reactions
   c. burning gases d. inflammable gases
5. Reproduction in yeast and starfish depends on ....
   a. fertilization b. regeneration c. meiotic division d. mitotic division

B Compare between :

1. positive acceleration – negative acceleration - in terms (Definition – final speed).
2. Focus of the convex mirror – focus of the concave mirror - in terms (cause of formation- the properties of image).

C A train starts to move at 7 o'clock in the morning then, What is the time of arriving if it moves with speed 100 Km/h to cut a distance of 500 Km.

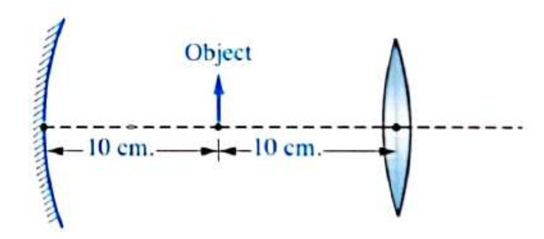
Question 4

A Rewrite the following statements after correcting the underline words :

1. Chromosomes arranged a long the cell equator in the **anaphase**.
2. Euglena can reproduce asexually by **budding**.
3. Radius of mirror curvature = $\frac{1}{2}$ × Focal length.
4. When an object moves at acceleration equals zero, this means that its **acceleration is positive**.
5. If a light ray falls passing through the optical center of the convex lens, it exits passing **through the focus**.

B An object was placed in the middle between a convex lens whose focal length is 5 cm. and a plane mirror, the distance between them was 20 cm (as in the figure).

1. Find the distance between the image formed by the convex lens and the image formed by the plane mirror.
2. Mention the properties of the image formed by the convex lens.



C What happens in the following states :

1. Absence of centrosome from the animal cells.
2. The nebula lost its temperature in laplace's opinion.
3. Starfish losses on of its arms, while it contains a part of the central disc.

10 Kafr El-Sheikh Governorate

Answer the following questions :

Question 1

A Complete the following statements :

1. Sexual reproduction depends on two main processes, which are .... and ....
2. The galaxy that contains most of the stars we see at night is named .... galaxy.
3. When the distance is measured in meter, the speed unit is measured in ....

4. The point that is in the middle of reflecting surface of the concave mirror is called ....
5. The first phase for a cell to enter mitosis is ....

B **Rewrite the following statements after correcting the underline words :**

1. The speed is called uniform when the object covers equal distances at **unequal** periods of time.
2. The solar system is composed of **seven** planets rotating around the sun.
3. The Hubble telescope was launched in an orbit around the earth at a height of **5000** km.
4. The image of an object formed in a **convex** mirror is upright and equal to the object.

Question 2

A **Write the scientific term for each of the following :**

1. A pair of connected threads at the centromeres in a chromosome.
2. The line that passes through the center of curvature of the mirror and its pole.
3. The displacement covered in a unit time ($\frac{\text{displacement (km or m)}}{\text{total time (hour or second)}}$)
4. The phenomenon of the light bouncing off in the same medium when it strikes a reflecting surface.
5. The ability of an animal to compensate its missing parts.
6. An eye disease because of old age that causes a difficulty of vision as a result of the darkness of the lens.

B **Compare by giving definition between :**

1. Asexual reproduction and sexual reproduction.
2. Scalar physical quantities and vector physical quantities.

Question 3

A **Give reasons for :**

1. Pilots take in consideration the velocity of winds when flying.
2. Sexual reproduction is a source of genetic variation.

B A car covered 500 meters westward within 40 sec, then only one kilometer northward within 100 sec, then 500 meters eastward within 60 sec to approach a fuel filling station.

Calculate the following :

1. The total distance covered by the car.
2. The total time taken to cover this tour.
3. The displacement from starting point to the filling station.
4. The velocity of the car.
5. The average speed of the car.

Question 4

A Choose the correct answer :

1. Acceleration measurement unit is ....
   a. meter/sec b. meter/sec^2 c. meter. Sec
2. The equipment which is used in studying the Sun spectra is ....
   a. hubble telescope b. contact lenses c. solar telescope
3. The .... contains genetic material from both parents and grow to form an individual carries characters from both parents.
   a. chromosome b. zygote c. gamete
4. The image formed by concave lens is always ....
   a. virtual and erect b. real and magnified c. real and diminished
5. An incident ray falls parallel to the principal axis of a concave mirror will reflect ....
   a. passing through the focus b. passing through the center of curvature
   c. parallel to the secondary axis.
6. The founder of the nebular assumption is ....
   a. Laplace b. Fred Hoyle c. Molten

B What would happen when :

1. Putting a yeast fungus in a warm sugary solution.
2. A person who has long sightedness defect is using a convex lens while reading.

11 Behiera Governorate

Answer the following questions :

Question 

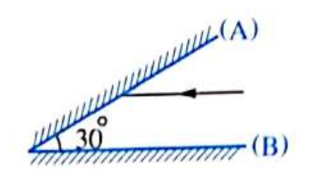
A Write the scientific term for each of the following statements :

1. The point inside the lens lies on the principal axis in the mid distance between its faces.
2. Asexual reproduction occurs by different parts of the plant without needing seeds.
3. A disease that infects the eye and causes a difficulty of vision because the eye lens becomes dark "opaque".
4. They are the arrangement of homologous pairs of chromosomes where each pair consists of 4 chromatids.
5. The acceleration by which an object moves when its final speed is less than its initial speed.
6. A flat gaseous rounded disk that formed the planets of the solar system.

B Give reasons for :

1. Pilots take in consideration the velocity of the wind during their flights.
2. The number of chromosomes is constant in the same species which reproduce sexually.

C If a light ray fell on mirror (A) such that it was parallel to mirror (B) as in the opposite figure. Trace the path of the ray until its reflection on mirror (B), then Calculate the reflection angle of the light ray from the mirror (B).



Question 2

A Correct the underline words :

1. When an object moves at uniform acceleration, this means that its speed is **zero**.
2. If the nucleus of pollen grain of a plant contains (10) chromosomes, so the nucleus of its leave's cell contains **(5) pairs** of chromosomes.
3. A moving car covers 200 kms in 150 min, its speed equals **90** km/hour.
4. Spores are found in the bread mould fungus inside special organs which are called **ovary**.
5. The shortest distance covered by a body in a certain direction is called the **speed**.
6. The scientist **Isaac Newton** published a research entitled "World Order" and that was in 1796.

B What happen when ...... ?

1. A moving body covers the same distance in half the time according to its speed.
2. Incidence of a light ray passing through the centre of curvature of concave mirror.

C A body is placed at 8 cm from a surface of a convex lens is made of two surfaces of spheres, the diameter of each sphere is 16 cm, Show by drawing the distance between the object and its image and write the properties of the image.

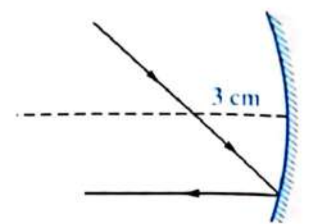
Question 3

A Choose the correct answer :

1. The line between the centres of curvature of the lens passing by the optical centre of the lens is called ....
   - a. the focal length
   - b. the principal axis
   - c. the secondary axis
   - d. the radius of curvature
2. The .... division occurs to produce sperms.
   - a. mitotic in ovary
   - b. meiotic in ovary
   - c. mitotic in tests
   - d. meiotic in tests

3. In the opposite figure :

Radius of mirror curvature = ... cm.



a. 3 b. 6

c. 9 d. 12

4. From unicellular organisms that reproduce by binary fission ....

a. amoeba and bacteria b. paramecium and euglena

c. amoeba and paramecium d. bacteria and simple algae

5. If the relative speed of a car is 20 km/hour relative to an observer moves at speed of 40 km/hour in the same direction, so the actual speed of this car is .... km/hour.

a. 20 b. 40 c. 60 d. 80

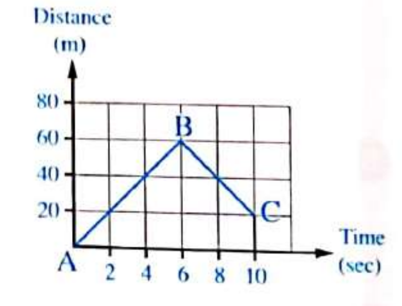
6. Our solar system is located in one of the .... arms of the Milky Way galaxy.

a. spiral b. oval c. straight d. circular

B Mention the important of each of the following :

1. A convex mirror is put at the left side of the driver of the car.
2. Centrosome in the animal cell.

C The opposite graph represents the movement of a body from point (A) to point (C) passing by point (B)



Calculate the following :

1. Speed
2. Velocity

Question 4

A Complete each of the following :

1. Force is considered as .... physical quantity, while mass is considered as .... physical quantity.
2. The two gases which produced galaxies, stars and are the universe over millions of years are helium and hydrogen with a percentage of .... , ... respectively.
3. Velocity and displacement of an object are similar in .... and are differ in ....
4. Some somatic cells in the human body are not divided at all such as .... and others are divided under certain circumstances such as ....
5. The movement path may be .... , ... or combination of both.
6. Astronomers use special equipments centered on Earth as .... , or carried into space as .... in order to study the Sun.

B A car speeds up from zero meter / second to 10 meter / second in (4) seconds, then it slows down to 5 meter / second in (2) seconds. Calculate :

1. The acceleration of the moving car in :
   (A) The first period.
   (B) The second period.
2. The time taken by the car to stop if it moves at the same rate of change in velocity in the second period.

C Study the opposite figures, then answer :

Mention the number of the figure that represent :

1. A scientific mistake. (..........)
2. Reduces the number of chromosomes to half. (..........)
3. Produces the compensation of the damaged cells and repairing cells of wound. (..........)
4. The variation of genetic traits among the individuals of the same species. (..........)

Cell division
(1)
Cell division
(2)
Cell division
(3)

12 Ismailia Governorate

Answer the following questions :

Question 1

A Complete the following statements with suitable words :

1. The chromosome chemically consists of protein and .... called DNA, which carries .... of the living organism.
2. Acceleration is considered one of .... physical quantities, while time is considered one of .... physical quantities.
3. Real image is not formed by .... lenses, ... mirrors and plane mirrors.

B Compare between : Nebular theory and modern theory concerning the name of the scientist.

C A car moves from rest and its speed reaches 25 m/sec in 10 seconds :

1. Calculate the acceleration.
2. Mention the type of acceleration.

Question 2

A Write the scientific term for each of the following statements :

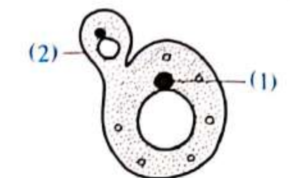
1. The regular speed by which the moving object moves to cover the same distance at the same period of time.

2. The length of the shortest straight line between two positions.
3. The cells formed from reproductive cell inside living organisms by meiotic division.
4. Disease infects the eye lens, so it becomes dark (opaque).
5. The force that controls in the orbits of planets around the Sun.

B When do this following happen ... ?

1. The relative speed of a moving object relative to an observer is more than its real speed.
2. The distance covered by a body equals the amount of displacement happened.

C The opposite figure shows a yeast fungus, answer :



1. What is the type of its asexual reproduction.
2. What happen to both (1) , (2) during the reproduction process.

Question 3

A Correct the underlined words :

1. Pilots take in consideration the **uniform speed** of the wind.
2. The long-sightedness is corrected by using a **concave mirror**.
3. The old stars gather in the **edges** of the galaxy.
4. In the rabbit cells, the spindle fibers are formed from **condensing the cytoplasm at the cell poles**.
5. When an object moving at a uniform acceleration, this means that its speed is **zero**.

B From the opposite figure in which position 1 , 2 or 3 is suitable to put the object to from :

1. Real, inverted and diminished image.
2. Virtual, upright and enlarged image at the same side of object.
3. No image.

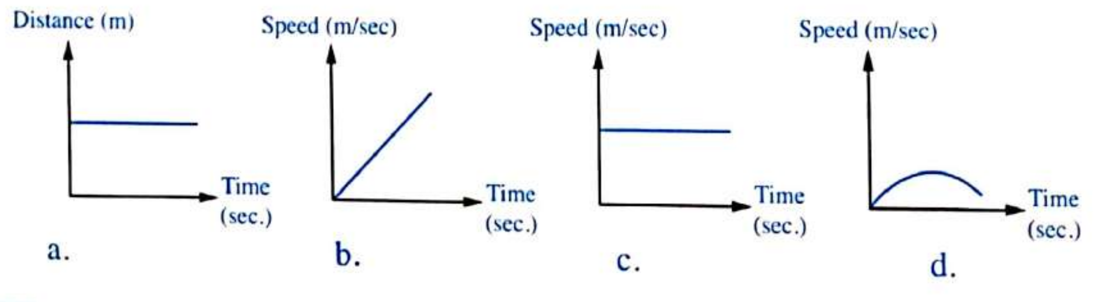
C What are the results when ..... ?

1. The incident light ray passes through the centre of curvature of the concave mirror.
2. Crossing over phenomenon occurs.

Question 4

A Choose the correct answer from the following :

1. Which of the following graphs describe the movement of an object at a constant speed.



2. .... lenses are used instead of glasses.

a. Concave. b. Convex. c. Contact. d. cylindrical.

3. The cells which are not divided at all are .... cells.

a. adult red blood. b. stomach. c. liver. d. skin.

4. The two gases which produced galaxies, stars and universe over millions of years are ....

a. oxygen and helium. b. helium and hydrogen.
c. oxygen and hydrogen. d. helium and nitrogen.

5. The cell is preparing to enter to meiotic division where the amount of the genetic material duplicates in .... phase.

a. prophase 1 b. interphase. c. metaphase 1. d. Telophase 1.

B A hand-ball field in the form of a rectangle of 18 meters length and 3 meters width, what is the a mount of distance and displacement covered by a player moves around the field one complete cycle. :

C The figure in front of you shows one of the phase of a somatic animal cell division :

1. What is the name of this phase and the phase that precedes it ?
2. What type of division does this phase belongs to ?

13 Suez Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. .... established the crossing star theory.

a. Laplace b. Alfred Hale c. Hubble d. Chamberlain

2. If an object is placed at a distance less than the focal length of concave mirror, a virtual, upright and .... image is formed.

a. diminished b. equal c. magnified d. real

3. The mirror that its reflecting surface is a part of the inner surface of a hallow sphere is a .... mirror.

a. convex b. diverging c. converging d. plane

4. Short-sightedness leads to collect rays .... the retina.

a. in front of b. behind c. above d. below

5. The change in speed in a unite time is called ....

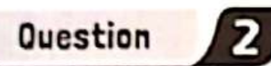
a. velocity. b. average speed c. displacement d. acceleration

B Look at the opposite figure then answer :

1. To which type of cell division it belongs ?
2. What is the name of this phase ?
3. What happens in this phase ?

C Compare between :

Positive acceleration and negative acceleration. (according to definition).



A Write the scientific term :

1. The change of an object's position as the time passes according to a fixed point.
2. It contains all the galaxies, stars, planets and living organisms.
3. The speed of a moving body relative to a moving or a static observer.
4. Specialized cells which produce gametes.
5. The result of dividing the total covered distances that a moving object covers by the total periods of time taken to cover this distances.

B Give reasons for :

1. The force is a vector quantity.
2. The importance of the crossing over phenomenon.
3. The incident light ray which falls perpendicular on a plane mirror reflects on itself.

C Mention the conditions of occurrence for each of the following :

1. The reproduction by regeneration in starfish when it loses one of its arms.
2. The collection of the rays after being reflected from the concave mirror in the focus of the mirror.

Question 3

A Complete the following statements :

1. In Laplace's opinion, the nebula lost its sphere form and became in a form of a flat rotating disk under the effect of ....
2. The optical piece which forms laterally inverted image and equal to the body is called ....
3. The vegetative reproduction in plants occurs without the need of ....
4. In yeast, the bud emerges as a lateral bulge in the parental cell, then the cell nucleus is divided by .... division.
5. When the moving object covers equal distances at un equal periods of time this means that the body moves with .... speed.

B **An object moves in a straight line with a uniform speed of 5 m/sec in the east direction for two seconds. Calculate :**

1. The amount of the covered displacement through this period of time.
2. The covered distance through this period of time.
3. The acceleration of the moving object.

C **Define each of the following :**

- Fertilization.

2. The principal axis of the lens.



Question 4

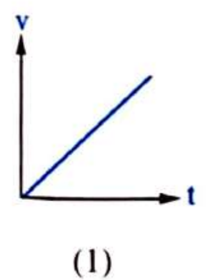
A **Rewrite the following statements after correcting the underlined words :**

1. Meiotic division occurs in flowering plants in the anther to produce **eggs**.
2. **The average speed** means that the object's speed changes by equal values through equal periods of time.
3. The theory that explained the origin of the **universe** is the modern theory.
4. **The gene** is the point of connection of the two chromatids of chromosome.
5. The number of chromosomes in the human liver cell is **quarter** the number of chromosomes in the female gamete.

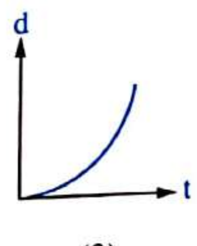
B **An object is placed at a distance of 5 cm.** from convex lens its focal length is 2 cm. Draw a diagram to show the path of rays that form the image of the object, showing the position and the properties of the image on the drawing only.

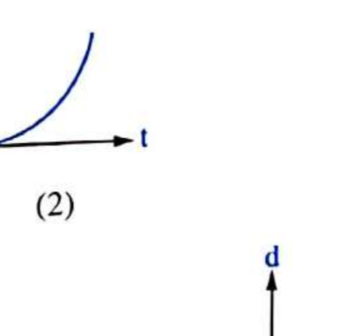
C **From the following graphs :**

Determine **two graphs** represent the case of an object moves with acceleration does not equal Zero.

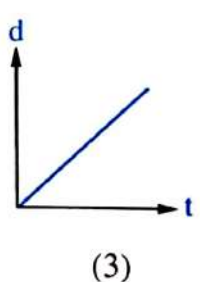


(1)

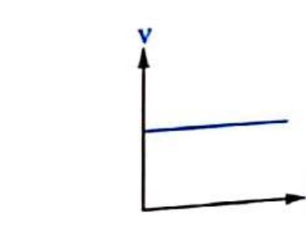




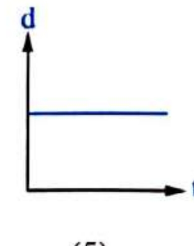
(2)



(3)



(4)



(5)

14 Port Said Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. When an object moves with acceleration = zero this means that ....
   a. speed is changed
   b. speed of the body is constant
   c. acceleration increases
   d. body moves with deceleration.
2. The optical piece which forms equal, laterally inverted image of the body is ....
   a. convex lens
   b. concave lens
   c. spherical mirror
   d. plane mirror
3. The two gases which produced galaxies, stars and universe through millions of years are ....
   a. oxygen and helium.
   b. oxygen and carbon dioxide
   c. hydrogen and helium.
   d. hydrogen and carbon dioxide
4. Meiosis division occurs in .... cells.
   a. liver
   b. skin
   c. bones
   d. testis

B What is meant by :

1. Relative speed
2. Fertilization
3. Regeneration

C A car moves with speed 80 m/s. If the driver used the brakes to decrease the speed so it decreased by $2 m/s^2$. Calculate its speed after 12 seconds from using the breaks.

Question 2

A Complete the following sentences :

1. The movement path may be .... or .... or both of them.
2. The convex lens .... the light, while the convex mirror .... the light.
3. The scientist who establish the Nebula theory is .... , while the modern theory is established by .... scientist.
4. In plants, male gametes are called .... , while female gametes are called ....

B Draw a diagram to illustrate the image formed when the object is placed at a distance more than double the focal length in case of :

1. The concave mirror
2. The convex lens.

C Give reasons for :

1. Physicists use mathematical methods like graphs and tables.
2. Shrinking of spindle fibers during the anaphase of mitosis division.



Question 3

A **Rewrite the following statements after correcting the underlined words :**

1. The incident light ray parallel to the principle axis of a concave mirror is reflected passing by the **curvature center** of the mirror.
2. The nuclei disappear during the mitosis cell division in **telophase**.
3. The solar system lies in **Andromeda** galaxy.
4. The scalar physical quantities are completely defined by its magnitude **and direction**.

B **If the number of chromosomes in a human pancreatic cell is 23 pairs, what is the number of chromosomes in the following cells :**

1. sperm.
2. fertilized ovum

C **What do we mean by saying that :**

1. A moving car covers a distance of 100 kilometers in two hours.
2. Angle of incidence of a light ray on to a plane mirror equals 20°.

Question 4

A **Write the scientific term for each of the following statements :**

1. It contributes in gens exchanging between the chromosome's chromatids and distributing them in the gametes.
2. The movement of galaxies away from each other in cosmic space.
3. A disease that infects the eye causing a difficulty in vision and the eye lens becomes opaque.
4. The displacement per one second.

B **The displacement that covered by a moving body through different times are recorded in the following table :**

Displacement (meter)	10	20	30	40	50	60
Time (second)	5	10	15	20	25	30

1. Represent the relation graphically.
2. Calculate the velocity from the graph.

C **Compare between each of the following**

1. Concave mirror and convex mirror. (in terms of the method of obtaing a virtual image)
2. Reproduction by binary fission and reproduction by budding. (in terms of giving examples for each of them)

15 Fayoum Governorate

Answer the following questions :

Question 1

A Complete the following :

1. The building unit of universe is .... , and its number in universe is about ....
2. The result of multiplying a speed of a moving object by time = ... and mathematical relationship is ....
3. The focal length of a convex lens equals distance between .... and ....
4. The nucleolus and .... disappear at the end of .... of meiosis.
5. The movement path may be .... or ...., or a combination of each.

B What is meant by ?

1. Relative speed.
2. Fertilization.
3. Centromere.

C On a straight line there is a moving bus whose speed changes from 6 meters/second to 12 meters/second during a period of three seconds, **what is the amount of acceleration ?**

Question 2

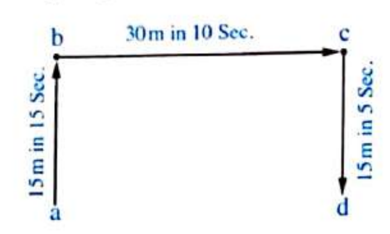
A Choose the correct answer to complete the following statements:

1. A person walks for several minutes, then he runs for another several minutes, so his average speed is ....
   a. equal to final speed
   b. greater than final speed
   c. less than final speed
   d. equal zero
2. If a light ray falls passing the optical centre of the convex lens it leaves the lens ....
   a. Without refraction.
   b. Parallel to the principal axis.
   c. Passing through centre of curvature
   d. Passing through focus.
3. According to Big Bang, within minutes the universe was formed containing hydrogen and helium with ratio ....
   a. 75 : 1
   b. 25 : 1
   c. 3 : 1
   d. 1 : 3
4. The parental individual disappear during reproduction by ....
   a. sporangium.
   b. regeneration.
   c. binary fission.
   d. budding.
5. From physical quantities which needed to identify its magnitude and direction is ....
   a. the mass.
   b. the force.
   c. the density.
   d. the area.

B Give reasons for each of the following :

1. Most of moving cars cannot move practically all time with uniform speed.
2. A convex mirror is put at the left and right side of driver.
3. Meiosis is considered as the source of genetic variation in living organisms.

C A body started its motion from (a) and covered 15 meters northward within 15 seconds, then 30 meters eastward within 10 seconds, and then 15 meters southward within 5 seconds as shown in the figure.



Find distance covered by a body, displacement and velocity.

Question 

A Write the scientific term for each of the following statements :

1. The straight line that passes by the pole of the mirror and its centre of curvature.
2. The value of change of an object's speed in one second.
3. A flat rotating disk formed solar system.
4. A speed in which an object covers equal distances at unequal periods of time.
5. They are formed from cells known as reproductive cells in living organisms.

B What would happen in each of the following ..... ?

1. Putting a yeast fungus in a warm sugary solution.
2. The object covers the same distance in half time (according to its speed)
3. Reproductive cells don't divide by meiosis.

C Mention the properties of the image formed by concave mirror when the object is located between focus and center of curvature, explain with drawing.

Question 

A Check (✓) in front of the right statements and (✗) in front of the false statements then correct the false ones :

1. The solar system is located in the Milky Way galaxy. ( )
2. Mitotic division occurs in somatic cells. ( )
3. The focus is the point that is in the middle of the reflective surface of the mirror. ( )
4. Displacement is the length of the longest straight line between two positions. ( )
5. Acceleration is a positive amount, if the object's speed increases by time. ( )

B (Metaphase – Prophase – Telophase – Anaphase) :

1. Arrange these phases according to the priority of occurrence.
2. Which type of division has these phases ?

C Compare between :

Long sightedness and short sightedness "according to lens used to treat".



Beni-Suef Governorate

Answer the following questions :

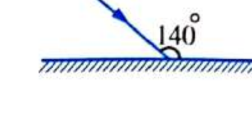
Question 1

A **Choose the correct answer :**

1. If the chromosomal number in the somatic cell is 2 N, then its number in the reproductive cells is ....

a. $\frac{1}{2}$ N b. 4 N c. 2 N d. N

2. A light ray is incident on the surface of a plane mirror, as in the figure it reflects where the angle of incidence equal ....



a. 40° b. 50°

c. 70° d. 140°

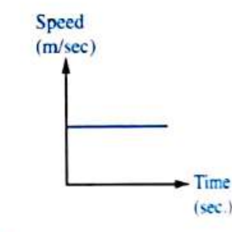
3. The optical piece that forms an equal and laterally inverted image of the body is the ....

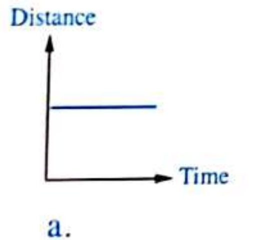
a. convex mirror b. concave mirror c. plane mirror d. convex lens

4. According to the Big Bang theory the ratio of helium to hydrogen was ....

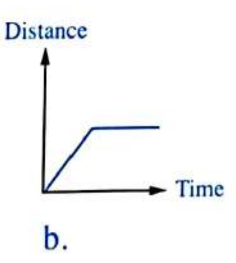
a. 75 : 1 b. 25 : 1 c. 3 : 1 d. 1 : 3

5. The opposite graph represents the relation (speed – time) of a moving object, which of the following graphs represents the relation (distance – time) of the same moving object ....

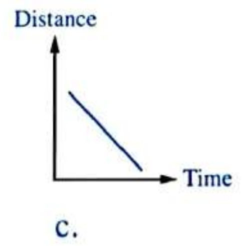




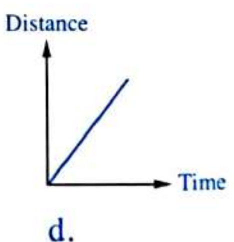
a.



b.



c.



d.

B **What happens when ... ?**

1. The nebula gradually lost its heat (concerning its size).
2. A moving object completes a complete cycle (concerning its displacement).
3. Incidence of a light ray parallel to the principal axis of a concave mirror (concerning its pathway).

C **What is meant by each of the following :**

1. The optical center of the lens.
2. Fertilization process.

Question 2

A Write the scientific term for each of the following :

1. It contains all the stars that we see at night in the sky.
2. The distance between the focus of the concave mirror and its pole.
3. The speed of a moving object relative to a constant or a moving observer.
4. The phase in which the cell is prepared for division.
5. The regular speed by which the object moves to cover equal distances at equal periods of time.

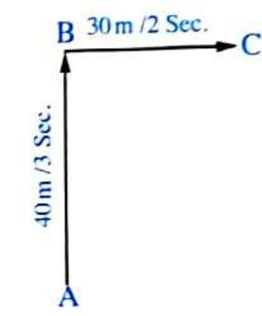
B Compare between each of the following :

1. Hydra and starfish (concerning the type of reproduction).
2. Male gamete and female gamete (concerning an example, for each of them).
3. Virtual image and real image (concerning its property, inverted or upright).

C The following figure represents the state of an object moves to the north from point (A) to point (B) where it covers 40 m through 3 sec, then it moves to the east from point (B) to point (C) where it covers 30 m through 2 sec.

Calculate each of the following :

1. Its speed. 2. Its velocity



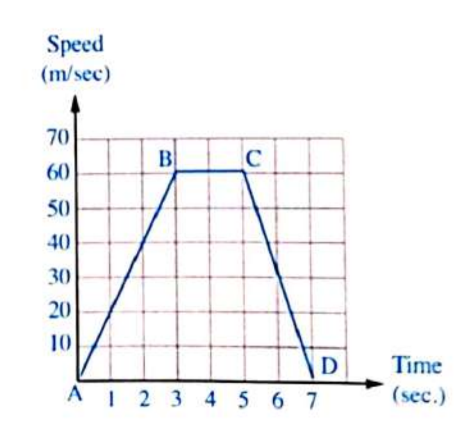
Question 3

A Complete the following statements :

1. The center of mirror curvature in convex mirror lies .... the reflecting surface.
2. During the .... of mitotic division a series of adverse changes occur.
3. At the end of 1st. prophase of 1st. meiotic division, the phenomenon of .... occurs.
4. If an object starts its movement from rest, It means that its initial speed equal ....

B Study the following figure which represents the movement of an object, then answer the following :

1. What is the value of acceleration at which the body moves in the period (AB)
2. What is the type of acceleration at which the body moves in the period (CD)
3. Calculate the interval of time at which the body moves with acceleration = zero.

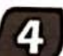


C **Examine the opposite figure which represents one of the phases of cellular division, then answer the following :**



1. What happens when the spindle fibers shrink in this phase ?
2. What are the changes that occur in the previous phase ?

Question 4



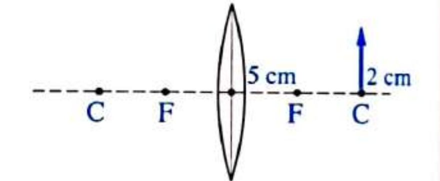
A **Correct the underlined and rewrite the statements in your answer papers :**

1. The measuring unit of **distance** is m/sec^2.
2. Some plants reproduce vegetatively by **seed.**
3. The chromosome chemically consists of DNA and **lipids**.
4. **Molten** used the phenomenon of stars explosion to develop his assumptions about evolution of the solar system.
5. If the regular speed of the car is 25 m/sec, this means that its speed equal **72** km/h.

B **Give Reasons for :**

1. Mass is a scalar physical quantity.
2. Using a convex lens for correcting long-sightedness.
3. The offspring have genetic traits identical to the parent in case of asexual reproduction.

C **Study the following figure then answer the following :**



1. Complete the path of the rays to form an image.
2. Complete the following :
   a. The length of the image = ... cm.
   b. The distance between the image and the optical center of the lens is .... cm.



17 Minia Governorate

Answer the following questions :

Question 1



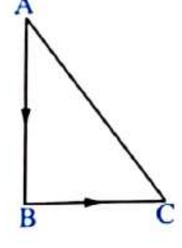
A **Choose the correct answer :**

1. If a train moves with a speed 100 km/h it covers a distance 50 km in .... time.
   a. 5 hour   b. 0.05 hour   c. 2 hour   d. 0.5 hour
2. Mushroom is reproduced by ....
   a. regeneration   b. budding   c. sporogony   d. binary Fission
3. Within minutes from the Big Bang, the ratio of hydrogen was .... %.
   a. 100   b. 75   c. 50   d. 25

4. If you know that the focal length for a concave mirror equals 10 cm, so for getting a virtual image for an object, it must put at a distance from the mirror equals .... cm.

a. 20 b. 15 c. 10 d. 5

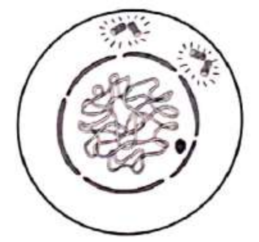
5. In the opposite figure, an object starts its movement from point (A) towards point (B) then It turn East to point (C) therefore the displacement for the object equals the length of ....



a. AB b. AC

c. AB + BC d. BC

B In the opposite figure :



1. What is the name of the phase which is represented by that figure ?
2. When does this phase occur ?
3. Why does the cell pass by this phase ?

C What is meant by :

1. Cataract
2. uniform acceleration



A Complete the following statements by the suitable answer :

1. A car moves in a certain direction by a speed equals 80 Km/h, its speed appears 40 Km/h for an observer moves with a speed .... in .... direction of the car.
2. According to the modern theory, the cloud of gas was subjected to .... process forming moving planets.
3. Real image cannot be formed by .... lens or .... spherical mirror.
4. The chromosome chemically consists of .... and ....

B An object moves in a straight line and covers distance in different times, recorded in the following table :

Distance (meter)	10	20	30	40	50
Time (second)	4	8	12	16	20

1. Draw the graphic relationship for the values illustrated in the table ?
2. Calculate the value of speed by which the object moves ?

C What happens in the following Cases :

1. An incident light ray passing through the centre of curvature of a concave mirror.
2. Bulge is disconnected from the parental cell in the yeast fungus after it is fully grown.
3. Plane mirror is put on the left side of the car driver.

Question 3

A Write the scientific term for each statement :

1. A vision defect is formed as a result in the shortness of the radius of the ball thus the retina is close to the eye lens.
2. The covered displacement during the unit of time.
3. A unit is used to measure the distance between celestial bodies in the universe.
4. The process of exchange between the two inner chromatids.
5. It contains all the galaxies, stars, planets and living organisms.

B An object is put at a distance of 6 cm from the surface of a convex lens, its focal length is 2 Cm illustrate with drawing the position of the image for the object, state its properties.

C Compare between the following :

1. Sexual and asexual reproduction (genetic traits)
2. Scalar physical quantity and vector physical quantity (concept)

Question 4

A Correct the underline words in the following statements :

1. The speed of the car can be detected directly by using the **compus**.
2. **Centre of curvature** is the point that is in the middle of the reflecting surface of the mirror.
3. Chromosomes are arranged nearly along the cell equator in the **anaphase**.
4. The solar system is located in one of the **oval** arms of the Milky Way galaxy.

B A train moves with a speed of 20 m/s and when using the breaks it moves with deceleration $4 m/s^2$. Calculate the time required to stop the train.

C Give Reason for :

1. In the plane mirror the image cannot be received on a screen.
2. The amount of fuel consumed during flying between two cities differs by the difference of the wind direction.

D State the importance of Nano gold particles in the medical field.



18 Assiut Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. The ability of some animals to compensate their missing parts is called ....
   a. vital b. reproduction c. regeneration

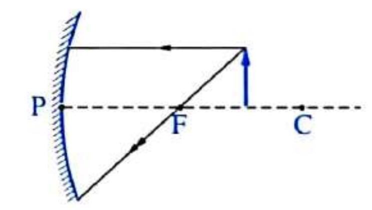
2. When a body moves by acceleration equals zero this means that ....
   a. the body acceleration is increasing
   b. the body velocity is uniform (constant)
   c. The body velocity is variable.
3. If a person stands at 3 metre from a plane mirror so the distance between the person and his image in the mirror equals .... metre.
   a. 3 b. 4 c. 6
4. The two factors which can be used to describe the object's movement are ....
   a. distance and time b. speed and time c. area and time.
5. Scientists believe that the universe originated from a massive explosion and was in a (an) .... state.
   a. contraction then expansion b. expansion then contraction
   c. continuous expansion
6. From the measuring units of speed ....
   a. m/s b. m × s c. m/s^2.

B Compare between :

Sexual reproduction and asexual reproduction in terms of :

The genetic traits of the resulted offspring.

C Draw the figure in your answer paper then complete :



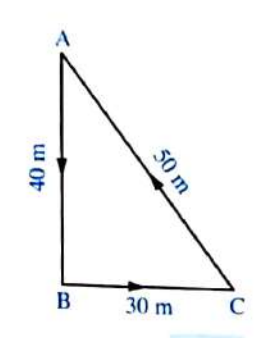
1. the path of an object image light rays.
2. Mention the properties of formed image.

Question 2

A Complete the following statements :

1. The point that lies in the middle of the reflecting surface of the concave mirror is called ....
2. The solar system is located in one of the .... arms of the Milky Way on the edge of the galaxy.
3. The vision defect which is due to the decrease of convexity of the eye lens (the eye ball diameter) surface is called ....
4. The spindle fibers are formed during the cell division in ....
5. **In the opposite figure :**

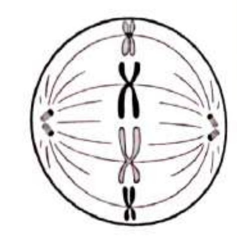
   A body starts its motion from point (A) to point (B), then to point (C) then returned to point (A), so the displacement covered equals ....



B What happens when :

1. Incidence of a light ray by angle 60° on a plane mirror.
2. The nebula lost its temperature gradually in laplace's theory.

C The opposite figure represents one of phase of a division in an animal somatic cell :



1. What is the kind of the division to which this phase belongs ?
2. What is the name of this phase ?
3. What are the changes occur in this phase.

Question 

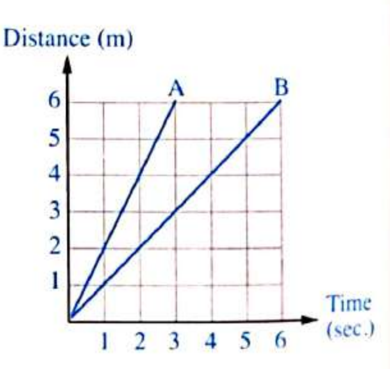
A Write the scientific term for each of the following statements :

1. Cellular division which leads to the formation of gametes.
2. A division of the total covered distances by the moving object over the total periods time taken to cover these distances.
3. The straight line that joins between the two centres of curvature of the lens.
4. It contains all the stars which we can see in the sky at night.
5. A process in which some important vital operations occur which prepare the cell for division and the genetic material in the cell is doubled.

B What is meant by :

1. The focal length of a concave lens is 7 cm.
2. An object moves with uniform acceleration equals 10 m/s^2.

C The opposite graph represents the relation



(distance – time) for two moving bodies (A) and (B)

1. What is the kind of speed in which the two bodies move.
2. Which of them moves with a greater speed ? and why ?
3. Calculate the speed of a body (A).

Question 

A Put (✓) or (✗) then correct the wrong ones :

1. The founder of crossing star theory is Fred Hoyle. ( )
2. The unicellular protozoans reproduce by binary fission. ( )
3. An example of the scalar physical quantity is force. ( )
4. The formed image by the plane mirror is real. ( )
5. The chromosome consists of two chromatides connected together at centromere. ( )

B Give reasons for :

1. The object that is placed at the focus of a convex lens has no image.
2. The continuous expansion of the space (universe).

C Show by an experiment how to determine the focal length of the concave mirror.

19 Sohag Governorate

Answer the following questions :

Question 1

A Write a suitable word to complete the following statements :

1. The two factors which can be used to describe the motion of a body are the .... and ....
2. Length of pen is 6 cm. this is .... physical quantity because it is enough to identify its .... only.
3. The distance of the object to the plane mirror .... the distance of its image to the mirror, and the straight line connecting the object and its image is .... on the surface of the mirror.
4. The Big Bang theory assumes the evolution of the .... , while the nebular theory assumes the evolution of the ....
5. Reproduction with .... occurs in unicellular protozoans, ... and bacteria.

B A car moved from rest and its speed reaches 25 m/s through 10 seconds.

1. Calculate the acceleration of the car.
2. What is a type of acceleration ?

C What is meant by .... ?

1. Sexual reproduction.
2. The focus of the convex lens.
3. The zygote.

Question 2

A Write the scientific term :

1. Angle of incidence equal angle of reflection.
2. Which have the main role in cell division.
3. Asexual reproduction occurs by using plant organs except seeds.
4. It contains the Sun and the solar system.
5. The actual length of the path that moving object takes from the starting point of movement to the end point of movement.

B Give reasons for each of the following :

1. It is hard to obtain a regular speed practically.
2. The number of chromosomes is constant in the same species which reproduce sexually.
3. The lens has two focus while the spherical mirror has one focus.

C A car moves 40 m. northward within 35 sec. Then covered 80 m. eastward within 20 sec. Then covered 40 m. Southward within 25 sec.

Calculate :

1. The velocity of the car.
2. The average speed of the car.

Question 3



A Correct the underline words in the following statements :

1. During the meiosis division, the crossing over phenomenon occurs at the end of **anaphase 1**.
2. **Irregular speed** means that the object's speed change by equal values through equal periods of time.
3. The explosion of the star occurs as a result of **chemical** reactions that occurs suddenly and violently.
4. If two cars move in same direction. The first car moves at 80 m/s and second car moves at 90 m/s. The relative speed of the second car to first car equal **170 m/s**.

B A convex lens has a focal length equal 20 cm. an object is placed at a distance of 40 cm. from lens. :

1. Draw a diagram to show the path of the rays falling on the lens and refracted ones from it.
2. Mention the properties of the formed image.

C What happens when ..... ?

1. The centrosome is not found in the animal cell.
2. When a moving body returns back to its starting point concerning it's displacement.
3. The incidant light ray passing through the center of curvature of the concave mirror.

Question 4



A Choose the correct answer between the brackets :

1. Earliest life forms began to appear on Earth after about .... million years of the Big Bang.

   a. 3000 b. 12000 c. 15000 d. 17000

2. Focal length of the spherical mirror equal .... the radius of curvature of the mirror.

   a. double. b. half. c. quarter. d. four time.

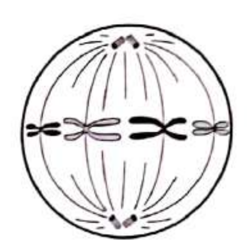
3. If the speed of a car is 72 k/hour, it's means that its speed equal .... m/s.
   a. 15 b. 20 c. 40 d. 70

4. When an object moves with acceleration = zero, this means the ....
   a. object's speed is changed.
   b. object moves with positive acceleration.
   c. object moves with deceleration.
   d. object's speed is constant.

B Compare between each of the following :

1. Long-sightedness and short-sightedness concerning the position of the formed image.
2. Mitosis division and Meiosis division concerning number of resulting cells at the end of division.
3. Crossing star theory and modern theory concerning the founder.

C The figure in the front of you shows a phase of cell division. Answer the following :



1. What is the type of this division ?
2. What is the name of this phase ?
3. What is the importance of this type of division ?

20 Qena Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. The radius of curvature of a spherical mirror equals .... of its focal length.
   a. double b. half c. quarter d. four times

2. Meiosis division happens in the cells of the ....
   a. liver b. skin c. two testes d. bones

3. **In the opposite figure,** a body starts its motion from point (A) to point (B) then to point (C), then returned to point (A), so the distance covered equals .... meter(s).
   a. zero b. 50
   c. 70 d. 120

A
40 m
50 m
B 30 m C

4. The solar system contains the Sun and .... planets revolving around it.
   a. 7 b. 8 c. 9 d. 10

5. The real image is formed by ....
   a. concave mirror b. convex mirror c. concave lens d. plane mirror

6. The number of galaxies in the universe is about .... million galaxies.
   a. 100 b. 1000 c. 10 thousands d. 100 thousands

B What is meant by :

1. The pole of the mirror.
2. Fertilization.

C A car moved with speed 50 m/s. If the driver used the breaks to decrease the speed, so it decreases by 2 m/s^2. Calculate its speed after 12 seconds from using the breaks.

Question 2

A Complete the following sentences :

1. .... theory assumed that the origin of the solar system was from the explosion of the expanded part of the Sun due to a huge star approached to it.
2. The result of multiplying a speed of a moving object by time = ...
3. The chromosome chemically consists of .... and ....
4. Earliest life forms began to appear on Earth after about .... years from the Big Bang.
5. The reflecting surface of the convex mirror is a part of .... surface of the sphere.
6. Time is from the examples of .... physical quantities.

B What is meant by each of the following ?

1. The average speed of a moving car is 60 km/hour.
2. Angle of reflection of the light ray = 40°

C The opposite figure represents one of the phases of the mitosis division :

1. What is the name of this phase ?
2. What happens in this phase ?

Question 3

A Put (✓) or (✗) in front of the following sentences :

1. The movement of the train is considered examples of moving in one direction. (   )
2. Asexual reproduction in the yeast fungus occurs by spores. (   )
3. The object speed increases by decreasing the time needed to cover the same distance. (   )
4. Galaxies move away in the cosmic space. (   )
5. The contact lenses can put (stick) to the eye iris and can be removed easily. (   )
6. The measuring unit of displacement is second × meter. (   )

B An object is put at a distance of 3 cm from a concave mirror, its focal length is 5 cm :

1. Draw a diagram to show the path of the rays falling on the mirror and the path of the rays that are reflected from it.
2. Mention the properties of the formed image.

C Mention one importance for each :

1. Centrosome in the animal cell.
2. Hydrogen and helium (according to the Big Bang theory)

Question 4

A Write the scientific term for each of the following sentences :

1. The speed of the moving object relative to a constant or a moving observer.
2. A flat gaseous round disk that formed the planets of the solar system.
3. The straight line that passes by the pole of the mirror and its center of curvature.
4. The ability of some animals to compensate their missing parts.
5. The force that controlled the orbits of planets around the Sun according to the modern theory.
6. Displacement covered through a unit time.

B Compare between each of the following :

1. Uniform speed and non-uniform speed. (according to definition).
2. The thick convex lens and the thin convex lens. (according to the focal length).

C Give reasons for :

1. Sexual reproduction is a source of genetic variation.
2. The concave lens is used to correct the short-sightedness.



21 Luxor Governorate

Answer the following questions :

Question 1

A Complete the following :

1. When an object moves at an acceleration equals zero, this means that the speed of the object is ....
2. The diameter of the thin lens is .... that of the thick lens.
3. The ability of some living organisms to compensate their missing parts is known as ....
4. According to the crossing star theory, the origin of the solar system was ....
5. The mass of cells produced due to the abnormal continuous division of cells is called ....

B What happens if ...... ?

1. The moving body takes double the time to cover half the distance according to its speed.
2. Crossing over phenomenon doesn't occur.
3. A light ray passes through the optical centre of the lens.

C An object is placed at a distance of 15 cm from a spherical mirror with radius of curvature 15 cm and when the mirror is displaced 3 cm. toward the object, an image for the object is formed on a screen - Determine the position of the formed image, write the properties of the formed image and explain by drawing.

Question 2

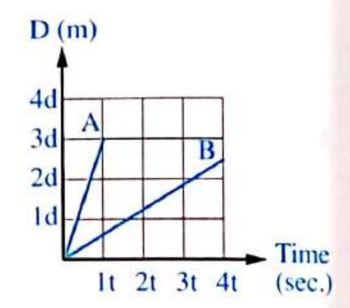
A Choose the correct answer for each of the following :

1. In the opposite figure :

the ratio between the speed of the two objects ($\frac{A}{B}$) , approximately is ....

a. $\frac{9}{2}$ b. $\frac{9}{4}$

c. $\frac{3}{2}$ d. $\frac{9}{3}$



2. The Earliest life forms began to appear on Earth ....
   a. before the formation of galaxies.
   b. after the formation of the solar system.
   c. after the appearance Dinosaurs.
   d. after the appearance of birds and mammals.

3. On putting an object at a distance 11 cm from a convex lens optical centre, a real inverted magnified image was formed and when putting it at distance 13 cm, a real inverted diminished image was formed, so the expected value of the focal lens is ....
   a. 10 cm b. 9 cm c. 6 cm d. 12 cm

4. The reproduction by budding occurs in .... fungus.
   a. mushroom b. yeast c. bread mould d. starfish

5. A car takes 4 sec. to reach 9 times its initial speed, so the car moves with acceleration which its numeric value equals .... of initial speed.
   a. quarter b. half c. three times d. double

B A body moves in straight line with speed 3 m/sec for 30 m distance, then he move on the same line for 120 m with a speed 6 m/sec. Calculate the average speed for this body from the beginning of the movement to the end ?

C Give reasons for :

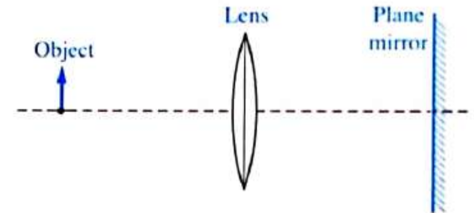
1. Asexual reproduction keeps the genetic structure of the living organism.
2. (Distance – Time) graph of an object that moves at a uniform speed is a straight line passing through the origin point.

Question 3

A Write the scientific term for each of the following :

1. The change in the position of an object by the time passes according to the position of another object.
2. The point of collection of the rays which incident parallel to each other and parallel to the principal axis of the concave mirror.
3. Sacs are carried by a lot of fungi and contain a large number of spores.
4. Glowing of a star for short time to become one of the most shining stars in the sky, then its glowing disappears gradually to return as it was.
5. The fusion of male gamete and the female gamete to form zygote.

B In the opposite figure :



An object is placed in front of a convex lens and put on the other side a plane mirror, when we look in the mirror, we find that no image is formed for the object, :

1. Mention the position of the object from the lens.
2. Why no image is formed for the object inside the mirror.

C Two cells are divided in a plant, one of them in the stem and the other in the ovary, if you know the number of chromosomes in each of them is 8 pairs of chromosomes, mention :

1. The kind of cell division in each cell.
2. The type of reproduction in this plant.
3. The number of chromosomes in each resulted cell.

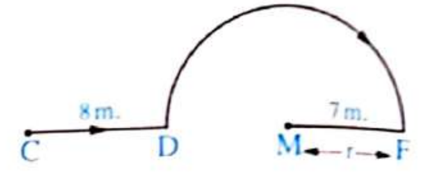
Question 4

A Correct the underline words :

1. **Plane mirror** converges the light rays.
2. From the theories that more acceptable between scientists in explaining the origin of the universe is **the modern theory**.
3. Gametes in living organisms are produced from a special cells known as **somatic cells**.
4. The relative speed of a moving car relative to an observer at rest is **less than** the real speed.
5. The speed of car can determine directly by using **the compass**.

B In the opposite figure :

An object is moving from point (C) to point (M) passing By two points (D , F) in (5 sec.), calculate :



1. The covered distance 2. The velocity.

C Compare between :

1. Reproductive cell and Gamete (according to the division).
2. Distance and displacement (according to definition).



22 Aswan Governorate

Answer the following questions :



Question 1

A Complete the following :

1. A long-sighted person needs a medical eye glasses with a .... lens.
2. If the body moves from rest so, its initial speed equals ....
3. The scientist Laplace founded the .... theory to explain the origin of the solar system.
4. The spindle fibers are formed from .... in animal cell.

B Mention the type of asexual reproduction for each of the following :

1. Sponges. 2. Starfish.

C A car moves with speed 80 m/sec. If the driver used the breaks to decrease the speed so, it decreases by 2 m/sec^2. Calculate its speed after 12 seconds from using the breaks.



Question 2

A Choose the correct answer :

1. The number of chromosomes in each somatic cell and the sperm of the living organism in respectively is .... chromosomes.

   a. 6 , 12 b. 5 , 6 c. 8 , 8 d. 12 , 6

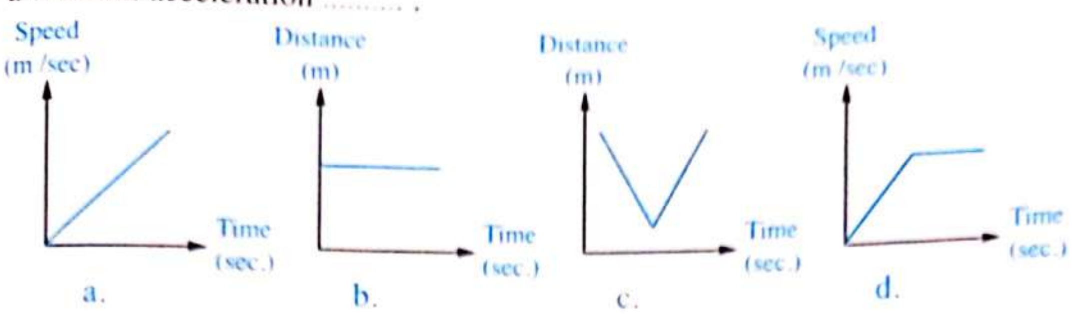
2. The glowing and explosion of stars as the Sun due to ....

   a. chemical reaction b. nuclear reaction c. burning of gases d. flammable gases

3. If an object is placed at a distance more than the twice of the focal length from convex lens its focal length 5 cm and the image which formed of an real, inverted and smaller at a distance .... cm.

   a. 3 b. 5 c. 8 d. 10

4. Which of the following graphical relation represents the movement of an object at a uniform acceleration ....



B Give reasons for :

1. The moving car with a certain speed seems to be at rest, to a moving observer with the same speed and in the same direction.
2. No image is formed for an object placed in the focus of convex lens.

C Mention one importance for :

1. The nuclear acid DNA in chromosome.
2. Speedometer in cars and planes.

Question 3

A Write the scientific term :

1. The covered straight distance by moving object in a constant direction.
2. Asexual reproduction by using plants organs except seeds.
3. A theory explains the origin of the universe due to emerged from the particles of helium and hydrogen gases, since 15000 million years.
4. It has genetic material from both parents and during growth gives a new offspring carries the traits of both parents.

B What happen in the following cases :

1. If an incident light ray passes through the optical center of the lens.
2. If a moving body covered the same distance in a double time "according to its speed".

C Show by drawing only :

The formation of the image of an object at the center of curvature of a concave mirror.

Question 4

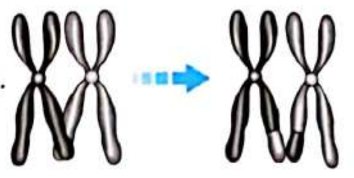
A Correct the underlined words :

1. **Real** image cannot be received on a screen.
2. The time is a **vector** physical quantity.
3. The **crossing star** is the largest star that can be seen from the surface of Earth.
4. In the **anaphase**, chromosomes arranged at the middle of the cell.

B When the following values equals zero :

1. The acceleration of a moving body.
2. The angle of reflection of a light ray from the reflecting surface of a plane mirror.

C The opposite figure represents a biological phenomenon :



1. What is the name of this phenomenon ?
2. Mention the name of this phase which this phenomenon occurs.
3. Mention the kind of division which this phase belongs to.
4. What is the importance of this phenomenon occurrence ?

23 Red Sea Governorate

Answer the following questions :

Question  1

A Write the scientific term for these sentences :

1. An area where the two chromatid connect together.
2. The displacement happens in one second.
3. A unit used to measure the distance between galaxies in space.
4. The ability of some animals of compensate the missing parts.
5. The straight line pass with the centre of curvature of concave mirror and any point on its reflecting surface except it pole.

B What is the result on each of the following :

1. Put plane mirror on the left of the car driver instead of convex mirror.
2. Movement body with regular speed to its acceleration.
3. The movement of galaxies with regular motion.

C A car move with speed 130 m/s, the speed decelerate with 5 m/s^2 when the driver use the breaks. Calculate the car speed after 20 seconds from the moment of using the breaks.

Question  2

A Complete the following sentences :

1. The .... division happens in .... cells to form the gametes.
2. The focus of concave mirror in the middle distance between .... , ...
3. The atomic particles merged to form .... , ... gases which form the galaxies and stars.
4. The body move 15 m east then opposite the direction 10 m west, so the distance equal .... metre, and the displacement equal .... metre.

B Correct the underline words :

1. Measure the relative speed of the moving object depend on **the time**.
2. The reproduction in yeast fungi completed with **spores**.
3. The theory of **stars explosion** depend on finding something looks like clouds or nebula in space.
4. **The focus** is a point inside the lens lies on the principal axis of the lens.

C Write the function of :

1. The central body in the animal cell (centrosome).
2. Contact lenses.

Question 3

A Give scientific correct reason :

1. The interphase occur before the cellular division.
2. We use the convex lens to correct the long-sightedness.
3. The explosion of some stars suddenly.
4. The motion of the train from example of the motion in one direction.

B What mean with each of the following :

1. Fertilization.
2. The crossing over phenomenon.
3. The distance between optical center and real focus of convex lens is 20 cm.

C If the number of chromosome in a gamete of an animal are 22 chromosome, what is the number of chromosomes in the cell of :

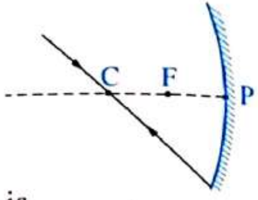
1. The zygote. 2. The testis. 3. The ovum.

Question 4

A Choose the correct answer :

1. The source of genetic vartion is .... reproduction.
   a. vegetative b. asexual c. sexual d. binary fission
2. The two factor describe the body motion are .... , ...
   a. distance and displacement b. velocity and mass
   c. acceleration and time d. distance and time.
3. The nucleolus and nuclear membrane appear in the ....
   a. telophase b. anaphase c. metaphase d. prophase 1
4. From the physical vector quantity is ....
   a. the length b. the force
   c. the volume d. the distance

5. The reflected angle of light ray in this figure equal ....



a. Zero°
b. 30°
c. 45°
d. 90°

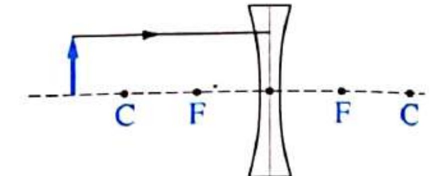
6. The body between the focus and pole of the concave mirror its image is ....

a. real diminished b. real magnified c. virtual magnified d. virtual diminished

B What is the difference between each of the following :

Asexual reproduction and sexual reproduction according to the hereditary trait of the resulting individual.

C From the opposite figure :



1. What is the type of lens.
2. Complete the light rays after drawing in your answer sheet to form the image.



24 North Sinai Governorate

Answer the following questions :



Question 1

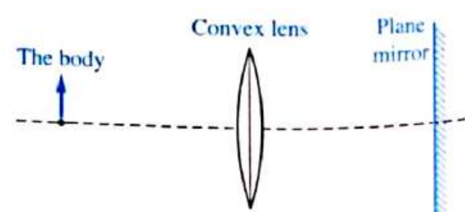
A Complete the following statements :

1. The secondary axis of the mirror is any straight line that passes .... and any point on its reflecting surface except ....
2. Sexual reproduction depends on two main process : .... and ....
3. Within minutes of the Big Bang, the atomic particles merged together producing .... and ...., which over the years produced galaxies, stars and the universe.
4. Force is considered as .... quantity, while the mass is considered as .... quantity.

B Give reasons for :

1. The motion of the metro considered as a motion in one direction.
2. Meiotic division is called reduction division.

C An object placed in front of a convex lens and placed a plane mirror in front of them.



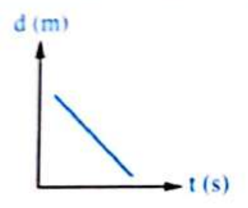
When you look inside the mirror you find that there is no image formed.

1. Determine the location of the body relative to the lens.
2. Why didn't the body image formed inside the plane mirror ?

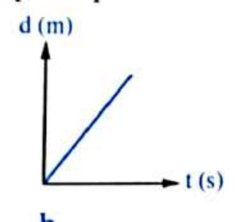
Question 2

A Choose the correct answer :

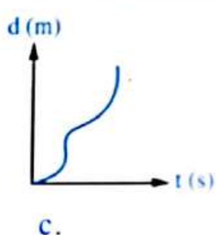
1. The speed of a car 120 km/h .... a car speed 40 m/s.
   a. equal to b. less than c. higher than
2. In the opposite figure, a body starts its motion from point (A) and stopped at point (C) passing by the point (B), the amount of body displacement equals : ....
   a. the length AB+BC
   b. the length BC
   c. the length AC
3. The parent individual disappears during reproduction in ....
   a. the yeast b. the bread mould c. the bacteria
4. .... theory has assumed that the Sun is the origin of the solar system.
   a. Big Bang b. Crossing star c. Alfred Hale
5. Which of the following graphs represent a body moves at zero acceleration.



a.



b.



c.

6. The real image is always ....
   a. inverted b. upright c. smaller

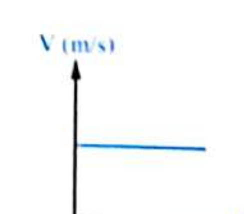
B Compare between :

1. Animal cell and plant cell (concerning formation of spindle fibers)
2. Distance and displacement (according to definition).

Question 3

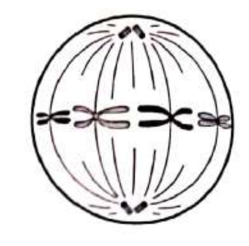
A Correct the underlined words :

1. Relative speed of a car relative to an observer in another car if they were moving in the same direction at a same speed of 100 m/sec is equal to **200 m/sec**.
2. The opposite graph represents a body **at rest**.

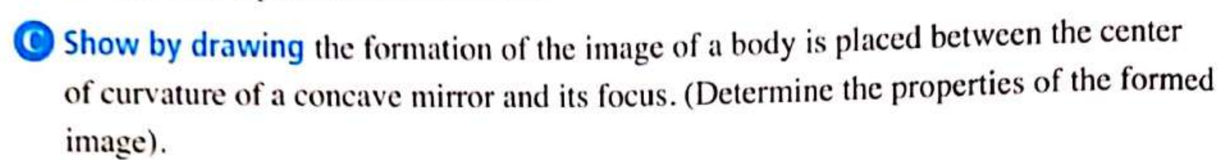


3. The crossing over phenomenon occurs in the first **anaphase** of first meiosis.
4. The **uniform speed** is the speed in a given direction.
5. The solar system lies in **Andromeda** galaxy.

B **The following figure represents a cell during its division answer the following :**



1. The figure represents .... of .... division.
2. Give reason for your answer.
3. What is the phase that follows it ?



C **Show by drawing** the formation of the image of a body is placed between the center of curvature of a concave mirror and its focus. (Determine the properties of the formed image).

Question 4

A **Write the scientific term :**

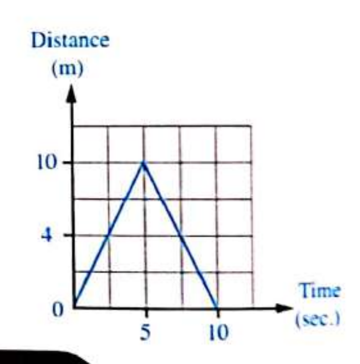
1. The regular speed by which the object moves to cover equal distances at same period of time.
2. A flat gaseous round disk that formed the solar system.
3. The ability of some animals to compensate their missing parts.
4. The image that cannot be formed on a screen.

B **What happens when :**

1. The diameter of the eye becomes longer than a certain length.
2. The nucleus of the cell is removed.

C **In the opposite shape, calculate :**

1. The total distance.
2. The value of velocity within the first 5 seconds.



25 South Sinai Governorate

Answer the following questions :

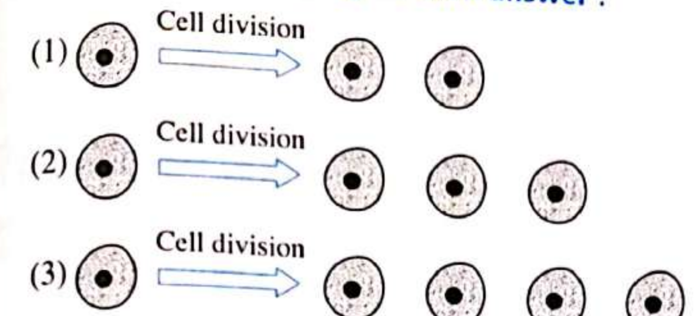
Question 1



A **Write the scientific term for each of the following :**

1. The connected point of two chromatid.
2. A point in the middle of the lens, lies at the principal axis in the mid distance between its two faces.
3. Located in one of the spiral arms of the Milky Way galaxy.
4. The ability of some animals to compensate their missing parts.
5. The displacement in one second.

B Study the following figure then answer :



1. Which figure has a scientific mistake ?
2. Mention the type of division in the other two correct figures.

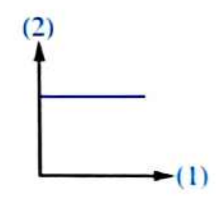
C A train began a journey its length 200 km at 6 am with speed 40 km/h. What is the time of its arrival ?

Question 2

A Give reasons for the following :

1. Vegetative reproduction of grape plant not produce new genetic properties.
2. It is hard to obtain regular speed practically.
3. The mass is a scalar quantity, but the force is a vector quantity.

B In the following graph, mention the name of horizontal axis (1) and vertical axis (2).



object move with acceleration = Zero

C Correct the underlined words :

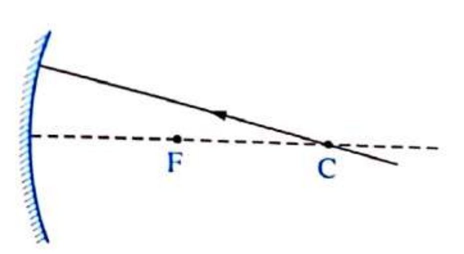
1. The distance of the object to the plane mirror **more than** the distance of its image to the mirror.
2. The cell produced from fertilization process is named by **tetrad groups**.
3. The real image is always **upright**.
4. **Light refraction** is the bouncing the incident light ray in the same medium when it strikes a reflecting surface.



Question 3

A Choose the correct answer :

1. In the opposite figure, the angle of reflection of the light ray equal ....



a. 90° b. 45°
c. Zero d. 30°

2. Meiosis occurs in the .... cells.

a. liver b. skin c. bones d. testis

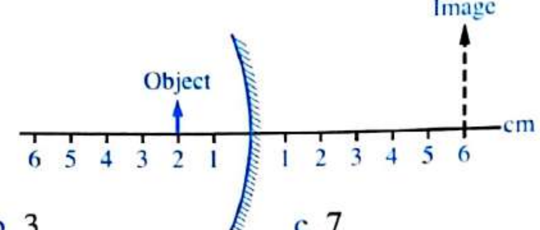
3. Spindle fibers begin to shrink at..........

a. prophase b. telophase c. metaphase d. anaphase

4. Paramecium is unicellular protozoan reproduce by ....

a. spores b. budding c. regeneration d. binary fission

5. In the following figure, an object put in front of a concave mirror, a virtual upright magnified image is formed. What is the focal length of this mirror ? .... cm.



a. 2 b. 3 c. 7 d. 6

B What is the results of the following :

1. A huge star approached the Sun according to the crossing star theory.
2. Elongation in the ball diameter of the eye ball.

C An object is put at 5 cm of a convex lens, its focal length 3 cm, show by drawing the position and the properties of the formed image.



Question 4

A Put (✓) or (✗) for the following :

1. Measuring unit of speed is sec/meter. ( )
2. Fred Hoyle assumed the crossing star theory. ( )
3. Relative speed is the speed of the moving object relative to an observer. ( )
4. Gametes in living organisms are produced by special cells known as the somatic cells during the meiosis division. ( )
5. The universe originated when the atomic particles merged together producing oxygen and nitrogen gas. ( )

B An object starts its motion from rest with regular acceleration can be calculated from the relation ($a = \frac{10}{t}$) :

1. Find the final speed of the object.
2. Mention the type of regular acceleration.

C Mention the importance of the following :

1. Speedometer in cars and planes. 2. Nuclear acid DNA.

26 The New Valley Governorate

Answer the following questions :

Question 1

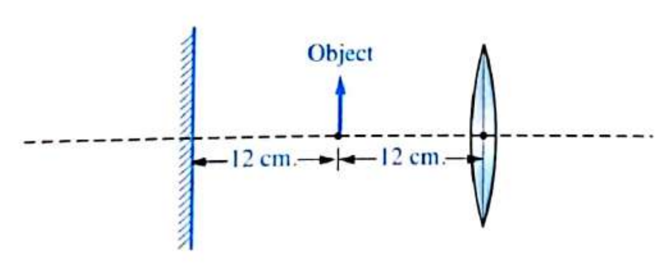
A Choose the right answer from the given choices :

1. The .... is the physical quantity that both its magnitude and direction are necessary for identifying it.
   a. quantity of matter b. scalar quantity c. vector quantity
2. If the train moves at 100 km/hour, it covers a distance of 40 km in .... hour.
   a. 0.3 b. 0.4 c. 0.5
3. The scientist .... published a research entitled "world order" which included his vision about nebular forming the solar system.
   a. Chamberlain b. Laplace c. Fred Hoyle
4. .... reproduction is a source of genetic variation.
   a. Budding b. Regeneration c. Sexual

B Mention the measuring unit of the following :

1. Mass 2. Velocity

C In the following figure, an object is placed in the mid distance between a convex lens which has a focal length of 6 cm and a plane mirror :



1. mention the properties of the image formed by the convex lens.
2. Calculate the distance between the image of an object formed by the convex lens and that formed by the plane mirror.

Question 2

A Complete the following sentences :

1. The vision defect which is due to a shortness in the radius of the eye ball is called .... and it is corrected by using ....
2. The two necessary factors for describing the movement of an object are .... and ....

3. The spindle fibers in the animal cell is formed from .... , but in the plant cell the spindle is composed from .... at the cell poles.

4. The chromosome consists of .... connected at ....

B Compare between :

1. The crossing star theory and the modern theory of the world according to :
   a. the scientist who based the theory
   b. the origin of the solar system.

Compare	Crossing star theory	Modern theory
The scientist who based the theory	....	....
The origin of the solar system	....	....

2. The real image and the virtual image according to : their properties.

Compare	Real image	Virtual image
Properties of the image	....	....

C If you know that a cell in your body divided twice producing four cells. Answer the following :

a. What is the type of division occurring in this cell ?

b. Does the number of chromosomes in the produced cells from this division change ? Why ?

Question 3

A Write the scientific term for each of the following :

1. The speed of moving object relative to the moving or constant observer.
2. The actual length of the path that the moving object takes from the starting point of the movement to the end point.
3. A phase in which some important biological processes occur to prepare the cell for division and the genetic material in the cell duplicates.
4. The point of the collection of the parallel rays which fall parallel to each others and parallel to the principle axis of the concave mirror.

B Mention the importance of :

1. The speedometer in cars and planes.
2. The nuclear acid DNA.

C **A car moved from rest and its speed increased to 10 m/sec in 4 seconds, then the car's speed decreased to 5 m/sec in 2 seconds. Calculate :**

1. The acceleration with which the car moved during :
   a. the first period
   b. The second period
2. Time needed to stop the car if it moved in the same rate of change in speed in the second period.

Question 4

A **Correct the underline words :**

1. Contact lenses are put on the **eye pupil** and can be easily removed.
2. Violent sudden **chemical** reactions occur in the star resulting in its explosion.
3. Sporogony occurs in **starfish**.
4. The radius of curvature of the mirror equals **a half ($\frac{1}{2}$)** of the focal length.

B **Give reasons for :**

1. mitosis is opposite to meiosis as it is important to children.
2. The convex lens is known as a converging lens, while the concave lens is known as a diverging lens.
3. The moving cars in certain speed seems constant relatively to an observer that is in the same speed and direction.

C **Explain by drawing the crossing over phenomenon then mention its role in the variation of genetic traits among the individuals of the same species.**



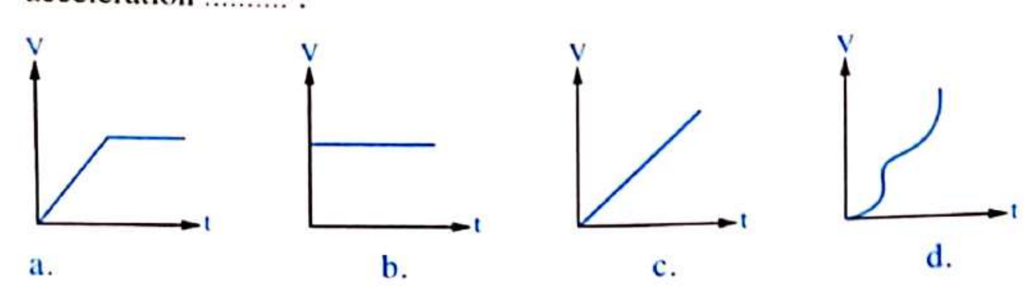
Answer the following questions :

Question 1

A **Choose the correct answer from those given :**

1. To obtain the virtual, equal and up-right image, we use .... mirror.
   a. concave b. plane c. convex d. all of the previous
2. The scientist who established the modern theory about the evolution of the solar system is ....
   a. Chamberlain b. Archimedes c. Fred Hoyle d. Laplace
3. If the number of chromosomes in a liver cell of a living organism is (32), then the number of chromosomes in the male gamete is .... chromosomes.
   a. 64 b. 16 pairs c. 16 d. 32

4. Which of the following graphical relations represent the moving of body by uniform acceleration ....



a. b. c. d.

5. If $\overline{V} \neq V$ this motion is described as a .... motion.

a. regular b. irregular c. positive d. negative

(B) An object is placed at distance 30 cm from the convex lens its focal length 25 cm, show by drawing the path of the ray and the properties of its image.

(C) What is meant by :

1. Vegetative reproduction. 2. The principal axis of the mirror.



Question 2

(A) Write the scientific term for each of the following :

1. The type of cell division leads to the formation of gametes.
2. Groups of stars that rotate together in the space by the effect of the gravity.
3. The speed of a moving object relative to an observer.
4. It is a point inside the lens lies on the principal axis.
5. It is the change of an object position as time passes according to position of another object.
6. Seeing far objects clearly and seeing the near objects distorted.

(B) A runner covered 50 meters northward within 30 seconds, 100 meters eastward within 60 seconds, then 50 meters southward within 10 seconds. Calculate :

1. Average speed. 2. Average velocity.

(C) Compare between each of the following :

1. Budding and regeneration. (Give example)
2. Real image and virtual image. (Definition)

Question 3

(A) Complete the following :

1. Bread mould fungus reproduces by ....
2. The spindle fibers is composed in the plant cell from .... at the cell poles.
3. An object is placed at the focus of a convex lens, it forms ....

4. If the object at rest moves regularly until its speed reaches 12 m/sec. after three seconds. So the acceleration equals ....

5. The product of velocity of body X time = ...

B According to the Big Bang theory, rearrange the following events from the oldest to the nearest :

1. Sun was born and Earth and the planets were created.
2. Ancestral galaxies were evolved.
3. Earliest life forms began to appear on Earth.
4. Matter got joined in mass.

C What happen when ..... ?

1. A light ray is incident by an angle 90° on a plane mirror.
2. The gravity between Sun and the planets rotate around is vanished.
3. The final speed of a moving body is greater than its initial speed.

Question 4

A Give reasons for each of the following :

1. The force and displacement are considered vector physical quantities.
2. The lens has two centers of curvature but spherical mirror has one center of curvature only.
3. Sexual reproduction is considered as source of genetic variation among individuals.
4. A moving car seems to be at rest relative to the rider of another moving car beside it, at the same speed and direction.

B From the opposite figure :

1. What is the name of this phase ? and which type of cell division it belongs ?
2. Describe what happens in this phase ?

C Correct the underline words :

1. A spherical mirror whose diameter is 40 cm, so its focal length equal **20** cm.
2. The universe emerged from the particles of **oxygen and nitrogen**.
3. Meiosis results in the formation of **two** cells, each contains half the genetic material of the parental cell.
4. **Relative speed** is the actual length of the path that a moving object takes from the starting point of movement to the end point.

Final Examinations 2019



1 Cairo Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. Acceleration is considered one of .... physical quantities, while time is considered one of .... physical quantities.
2. The solar system is located in one the .... arms of the Milky Way on the edge of the galaxy.
3. Somatic cells are divided by ...., while reproductive cells are divided by ....

B What is meant by the following :

1. The optical centre of the lens.   2. Irregular speed.   3. Fertilization.

C A car starts to move from rest in straight line, its speed reaches 12 m/sec. after 4 sec. Calculate the acceleration of the car, and what is the type of this acceleration.

Question 2

A Choose the correct answer :

1. Yeast fungus reproduces asexually by ....
   a. regeneration.   b. binary fission.   c. budding.   d. spore.
2. The solar system consists of the Sun and .... planets revolve around it.
   a. 7   b. 8   c. 9   d. 10
3. The image formed by .... is always virtual, erect and small.
   a. convex lens   b. concave mirror
   c. plane mirror   d. convex mirror and concave lens
4. The speed of a moving object relative to the observer is considered as .... speed.
   a. regular   b. average   c. vector   d. relative
5. If an object at a distance of 3 metres from a plane mirror. The distance between that object and its image is .... metre.
   a. 3   b. 6   c. 9   d. 12

B Explain by drawing :

The formed image by convex lens, when the body at a distance greater than double the focal length. Then write the properties of the formed image.

C Give reasons for the following :

1. Some persons have short-sightedness.
2. Asexual reproduction in living organisms produces individuals identical in genetic structure to those of their parent.

Question 3

A Re-write the following statements after correcting the underlined words :

1. The chromosomes chemically consists of nuclear acid called (DNA) and **fats**.
2. If the radius of curvature of a concave mirror equals 20 cm. its focal length will be **30** cm.
3. In meiotic cell division, Crossing over phenomenon occurs at the end of **anaphase 1**.
4. The scientist **laplace** assumed the modern theory about the origin of solar system.
5. In Telophase of mitosis cell division, two new separate cells are formed, each cell has **half** number of chromosomes of mother cell.
6. Concave lens **converges** the light rays that falling on its surface.

B What would happen in the following cases :

1. If the starfish loses one of its arms containing a part of its central disc.
2. If the incident light ray falls parallel to the principal axis of concave mirror.

C Mention the measuring unit for the following :

1. The mass.
2. Vector velocity.

Question 4

A Write the scientific term for the following :

1. The total distance that a moving object covers divided by total time taken to cover this distance.
2. The object's speed changes (increases or decreases) by equal values through equal periods of times.
3. The space which contains all the galaxies, stars, planets, moons and living organisms.
4. A biological process, where the living organism produces new individuals of the same kind and thus, ensuring its continuity.
5. The distance moved through a unit time.
6. The angle between the incident light ray and the perpendicular line on the reflecting surface from the point of incidence.

B Compare between the following :

1. Distance and displacement (according to definition).
2. Real image and virtual image.

2 Giza Governorate

Answer the following questions :

Question 1

A Complete the following statements :

1. In Milky Way galaxy, the old stars (the older) gather in the .... of the galaxy.
2. Parental individual disappears when reproduction occurs in ....
3. The incident light ray that passes through the focus of the convex lens, it exits from the lens ....
4. Mass is considered from .... physical quantity.

B Give reasons for :

1. The body which moves at acceleration can't move at a regular speed.
2. Shrinking of spindle fibers during the anaphase.

C Compare between : Pollen grain and sperm according to (site of formation).

Question 2

A Choose the correct answer :

1. Within minutes of Big Bang, hydrogen gas was formed by a percentage of .... %.
   a. 25 b. 50 c. 75 d. 100
2. If the number of chromosomes in liver cells of a certain living organism is (32) chromosomes then the number of chromosomes in ovum cell is ....
   a. 8 b. 16 c. 24 d. 32
3. The optical piece which forms laterally inverted (reversed) image and equal to the body is ....
   a. convex lens b. concave lens c. spherical mirror d. plane mirror.
4. A train moves at a speed (100 km/h), then it cover a distance of (40 km) within time .... hours.
   a. 0.3 b. 0.4 c. 0.5 d. 0.6

B When do the following happen ... ?

1. Formation of real image at the same position of the object which is placed in front of a concave mirror.
2. The displacement equal (identical) to the distance for moving body.

C Calculate the actual speed of the car whose relative speed is (80 km/h) relative to an observer moving in opposite direction at a speed of (30 km/h).

Question 3

A Write the scientific term for each of the following :

1. A theory assumed that the solar system was originally a glowing gaseous sphere revolving around itself.
2. The nucleic acid that carries the genetic traits of the living organism.
3. A mirror, always forms a diminished image for the object.
4. The displacement in one second.

B Define : 1. Tetrad. 2. The focal length of a lens.

C An object is placed at a distance of (8 cm) from a concave lens has a focal length (2 cm) :

1. Draw the direction of the ray that eye sees the image.
2. Mention the properties of image formed.

Question 

A Correct the underlined words :

1. Sudden violent **chemical** reactions occur within the star which led to its explosion.
2. Reproduction by sporogony occurs in **starfish**.
3. The long-sightedness is corrected by using **concave mirror**.
4. A moving car covers a distance of (200 kilometer) through (150 min.), then its speed is **90** km/h.

B What is meant by ... ?

1. A moving car covers a distance of 100 km in two hours.
2. Zygote.

C A train moves at a speed (30 m/sec). And when the brakes is used it moves with a decelerating (3 m/sec^2). Calculate the time taken to stop the train.



Alexandria Governorate

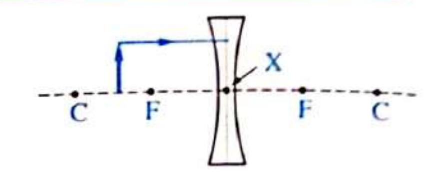
Answer the following questions :

Question 

A Complete the following statements :

1. The solar system lies on one of the spiral arms of .... galaxy.
2. From the scalar physical quantities is ...., while .... is from the vector physical quantities.
3. Condensing the cytoplasm in the two poles of the plant cells forms ....
4. Crossing over phenomenon happens between the .... during the meiosis division.

B 1. Copy the figure then draw the rays that form the image of the object.



2. The point (X) refers to ....

C **What is meant by the followings ... ?**

1. Fertilization.
2. The radius of curvature of a mirror.



Question 2

A **Choose the right answer :**

1. When a moving object covers equal distances in unequal intervals of time, so it moves by ....
   a. average speed. b. relative speed. c. uniforms speed. d. irregular speed.
2. The scientist who published a research including his vision about the Nebular assumption ....
   a. Chamberlin. b. Laplace. c. Fred Hoyle. d. Molten.
3. An object was put at 10 cm from a concave mirror, a real, inverted and equal image was formed, if the object moved 3 cm towards the mirror, so the formed image will be ....
   a. real, inverted and diminished. b. real, inverted and enlarged.
   c. virtual diminished. d. virtual enlarged.
4. An observer in a moving car with 80 km/h was observing a moving car with 90 km/h in the same direction so, the observed speed of the 2^{nd} car is ....
   a. 10 km/h. b. 80 km/h. c. 90 km/h. d. 170 km/h.

B **What are the results of the followings ... ?**

1. Falling of parallel peam of light parallel to the principal axis of a convex lens.
2. The meiosis division inside the anther and the ovary of a flower.

C **Name the phase that indicates the following changes during the cell division :**

1. Form two separate groups of chromatids.
2. Disappearing of the nucleolus and the nuclear membrane.



Question 3

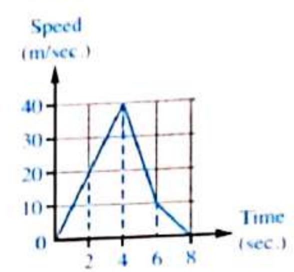
A **Write the scientific term for the following :**

1. Groups of stars gathered in distinctive shape.
2. The ability of some animals to compensate their missing parts.

B **The next graph illustrates the movement of a car, study it and answer the following :**

1. The driver used the break for the first time at the .... second when the speed value was .... m/sec.

2. Calculate the acceleration of the car through 4 seconds from the starting point.



C Compare between long-sightedness and short-sightedness concerning the concept and the treatment.

Question 4

A Correct the underlined parts in the following :

1. Amoeba reproduces by **budding**.
2. The formed image of an object that is put at **the centre of curvature** for a convex lens is virtual enlarged.

B Give reasons for the following :

1. The sporangium of bread mould fungus must be ruptured during reproduction.
2. The merging of atomic particles that happened during the Big Bang produced stars and the universe.

C Look at the following figures and answer :

1. Which of the two figures express the formation of F letter image.
2. The other figure is wrong because .... and ....

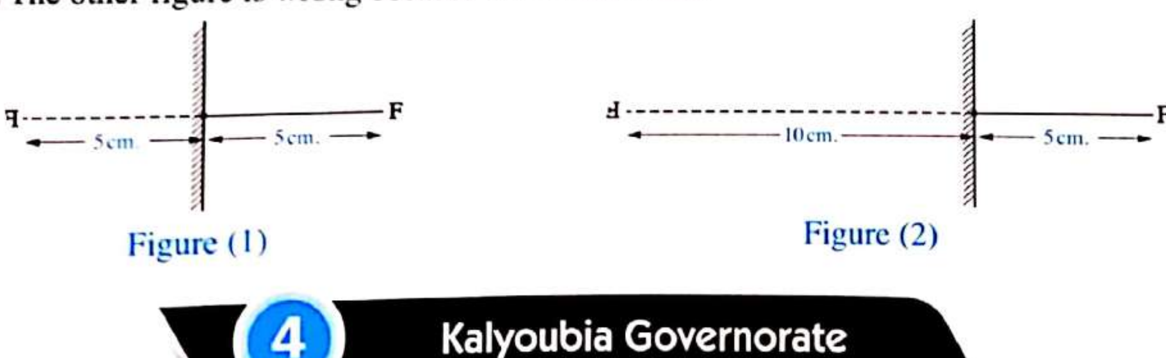


Figure (1) Figure (2)

4 Kalyoubia Governorate

Answer the following questions :

Question 1

A Write the scientific term for each of the following statement :

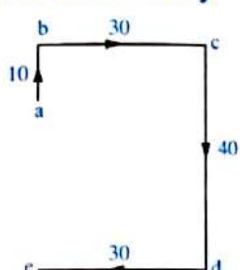
1. The point of connection of the two chromatids in a chromosome.
2. The line that passes through the optical centre of the lens without passing through the two centres of curvature of its faces.

3. The distance between the pole of a spherical mirror and its center of curvature.
4. It's the Sun and eight planets revolving around it.
5. The speed of a moving body that covers equal distances at unequal time intervals.

B What is meant by ... ?

1. The value of the length of the shortest straight line between two positions = 5 m.
2. The relative speed.
3. Spindle fibers during cell division.

C A person moves in the path (a b c d e) as shown in figure, he covered a distance of 10 m. northward in 2 seconds, then he covers 30 m. eastward in 10 seconds. and followed by 40 m. southward in 8 seconds, finally 30 m. westward in 5 sec.



1. Calculate the displacement of the person from the start of motion to end.
2. In which part of the person motion, his speed was the least ?

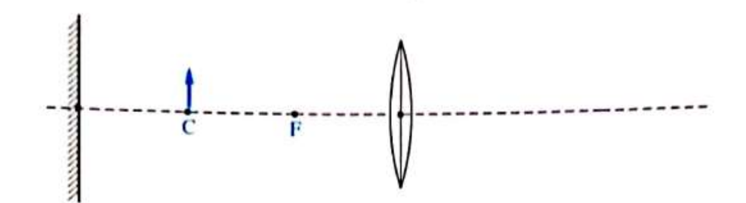
Question 

A Choose the correct answer :

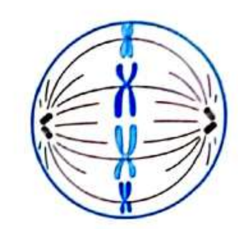
1. The .... is the phase in which the cell is prepared for division by doubling the genetic material.
   a. prophase　　b. interphase　　c. metaphase　　d. anaphase
2. A concave mirror has a focal length of 8 cm. An object is placed in front of this mirror forming an image at a distance 20 cm from the mirror. This means that the object is placed at .... from the mirror.
   a. 8 cm.　　b. less than 8 cm.
   c. 20 cm.　　d. more than 8 cm. and less than 16 mc.
3. A doctor advised a person who has a sight defect to use glasses with convex lenses. It means that this person suffers from ....
   a. a decrease in the convexity of the eye lens surface.
   b. an increase in the convexity of eye lens surface.
   c. an increase in the eyeball diameter.
   d. disability of seeing far objects clearly.
4. Reproduction by spores occurs in all the following organisms, except ....
   a. starfish.　　b. fungus.　　c. bread mould.　　d. mushroom.
5. One of the vector physical quantities is ....
   a. time of a car trip.　　b. length of a pen.
   c. mass of a cat.　　d. force by which person pushes a stone.

B In the figure shown, an object is placed at the centre of curvature of one face of a convex lens of focal length 6 cm. Then, a plane mirror is placed at the other side of the object at 8 cm. from the object. Copy the diagram in your answer sheet and answer :

1. Draw the path of light rays incident on the lens to form an image on a screen in front of the lens.
2. Calculate the distance between the two images formed by the lens and the mirror.



C The figure in front of you shows a phase of cell division. Answer the following :



1. What is the type of this division ?
2. What is the name of this phase ?
3. What is the importance of this type of division ?

Question 3

A Put (✓) in the front of correct statements and (×) in front of the wrong ones :

1. The solar system includes several galaxies. ( )
2. If the angle between the incidence ray and the reflected ray is 60°, the angle between the reflected ray and the reflecting surface is 60°. ( )
3. The displacement of an object is measured in m/sec. ( )
4. An assumption of the crossing star theory is that a star revolves near the Sun. ( )
5. Bread mould fungus reproduces by binary fission. ( )

B Give reasons for the following :

1. Meiotic cell division is called reduction division.
2. A donor for a part of the liver suffers no harm and can survive.

C A car moved from Banha to Cairo at a distance of 40 km in 30 minutes, then it returns back from Cairo to Banha in the same time. Calculate (in km/h) :

1. The car velocity from the beginning to the end of the journey.
2. The average speed of the car during the total time.

Question 4

A What would happen in each of the following ... ?

1. Absence of anther from the floral plants.
2. To the value of velocity of a moving object if the time of the same displacement is increased to double.
3. The organization and arrangements of stars in the galaxy were changed.
4. Focusing laser on the gold Nano-particles in the cells infected by cancer.
5. A light ray is incident passing through the center of curvature of a concave mirror.

B Mention the properties of the formed image in each of the following cases :

1. An object is placed in front of a convex mirror.
2. An object is placed in front of a convex lens at a distance less than its focal length.
3. An object placed at the focus of a convex lens.

C A car speeds up from 0 m/s to 10 m/s in 4 seconds, then it slows down to 5 m/s in 2 seconds. Calculate :

1. The acceleration of the moving car in the first stage and the acceleration of the moving car in the second stage.
2. The time taken by the car in the second stage to stop if it moves at the same rate of velocity change.

Final Examinations 2019



1 Cairo Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. Acceleration is considered one of .... physical quantities, while time is considered one of .... physical quantities.
2. The solar system is located in one the .... arms of the Milky Way on the edge of the galaxy.
3. Somatic cells are divided by ...., while reproductive cells are divided by ....

B What is meant by the following :

1. The optical centre of the lens. 2. Irregular speed. 3. Fertilization.

C A car starts to move from rest in straight line, its speed reaches 12 m/sec. after 4 sec. Calculate the acceleration of the car, and what is the type of this acceleration.

Question 2

A Choose the correct answer :

1. Yeast fungus reproduces asexually by ....
   a. regeneration. b. binary fission. c. budding. d. spore.
2. The solar system consists of the Sun and .... planets revolve around it.
   a. 7 b. 8 c. 9 d. 10
3. The image formed by .... is always virtual, erect and small.
   a. convex lens b. concave mirror
   c. plane mirror d. convex mirror and concave lens
4. The speed of a moving object relative to the observer is considered as .... speed.
   a. regular b. average c. vector d. relative
5. If an object at a distance of 3 metres from a plane mirror. The distance between that object and its image is .... metre.
   a. 3 b. 6 c. 9 d. 12

B Explain by drawing :

The formed image by convex lens, when the body at a distance greater than double the focal length. Then write the properties of the formed image.

C **Give reasons for the following :**

1. Some persons have short-sightedness.
2. Asexual reproduction in living organisms produces individuals identical in genetic structure to those of their parent.

Question 3

A **Re-write the following statements after correcting the underlined words :**

1. The chromosomes chemically consists of nuclear acid called (DNA) and **fats**.
2. If the radius of curvature of a concave mirror equals 20 cm. its focal length will be **30** cm.
3. In meiotic cell division, Crossing over phenomenon occurs at the end of **Anaphase 1**.
4. The scientist **laplace** assumed the modern theory about the origin of solar system.
5. In Telophase of mitosis cell division, two new separate cells are formed, each cell has **half** number of chromosomes of mother cell.
6. Concave lens **converges** the light rays that falling on its surface.

B **What would happen in the following cases :**

1. If the starfish loses one of its arms containing a part of its central disc.
2. If the incident light ray falls parallel to the principal axis of concave mirror.

C **Mention the measuring unit for the following :**

1. The mass.
2. Vector velocity.

Question 4

A **Write the scientific term for the following :**

1. The total distance that a moving object covers divided by total time taken to cover this distance.
2. The object's speed changes (increases or decreases) by equal values through equal periods of times.
3. The space which contains all the galaxies, stars, planets, moons and living organisms.
4. A biological process, where the living organism produces new individuals of the same kind and thus, ensuring its continuity.
5. The distance moved through a unit time.
6. The angle between the incident light ray and the perpendicular line on the reflecting surface from the point of incidence.

B **Compare between the following :**

1. Distance and displacement (according to definition).
2. Real image and virtual image.

2 Giza Governorate

Answer the following questions :

Question 1

A Complete the following statements :

1. In Milky Way galaxy, the old stars (the older) gather in the .... of the galaxy.
2. Parental individual disappears when reproduction occurs in ....
3. The incident light ray that passes through the focus of the convex lens, it exits from the lens ....
4. Mass is considered from .... physical quantity.

B Give reasons for :

1. The body which moves at acceleration can't move at a regular speed.
2. Shrinking of spindle fibers during the anaphase.

C Compare between : Pollen grain and sperm according to (site of formation).

Question 2

A Choose the correct answer :

1. Within minutes of Big Bang, hydrogen gas was formed by a percentage of .... %.
   a. 25　　b. 50　　c. 75　　d. 100
2. If the number of chromosomes in liver cells of a certain living organism is (32) chromosomes then the number of chromosomes in ovum cell is ....
   a. 8　　b. 16　　c. 24　　d. 32
3. The optical piece which forms laterally inverted (reversed) image and equal to the body is ....
   a. convex lens　　b. concave lens　　c. spherical mirror　　d. plane mirror.
4. A train moves at a speed (100 km/h), then it cover a distance of (40 km) within time .... hours.
   a. 0.3　　b. 0.4　　c. 0.5　　d. 0.6

B When do the following happen ... ?

1. Formation of real image at the same position of the object which is placed in front of a concave mirror.
2. The displacement equal (identical) to the distance for moving body.

C Calculate the actual speed of the car whose relative speed is (80 km/h) relative to an observer moving in opposite direction at a speed of (30 km/h).

Question 3

A Write the scientific term for each of the following :

1. A theory assumed that the solar system was originally a glowing gaseous sphere revolving around itself.
2. The nucleic acid that carries the genetic traits of the living organism.
3. A mirror, always forms a diminished image for the object.
4. The displacement in one second.

B Define : 1. Tetrad. 2. The focal length of a lens.

C An object is placed at a distance of (8 cm) from a concave lens has a focal length (2 cm) :

1. Draw the direction of the ray that eye sees the image.
2. Mention the properties of image formed.

Question 4

A Correct the underlined words :

1. Sudden violent **chemical** reactions occur within the star which led to its explosion.
2. Reproduction by sporogony occurs in **starfish**.
3. The long-sightedness is corrected by using **concave mirror**.
4. A moving car covers a distance of (200 kilometer) through (150 min.), then its speed is **90** km/h.

B What is meant by ... ?

1. A moving car covers a distance of 100 km in two hours.
2. Zygote.

C A train moves at a speed (30 m/sec). And when the brakes is used it moves with a decelerating (3 m/sec^2). Calculate the time taken to stop the train.

3 Alexandria Governorate

Answer the following questions :

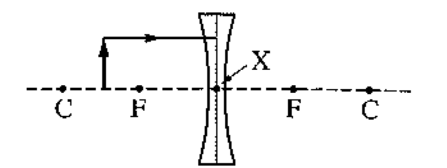
Question 1

A Complete the following statements :

1. The solar system lies on one of the spiral arms of .... galaxy.
2. From the scalar physical quantities is ...., while .... is from the vector physical quantities.
3. Condensing the cytoplasm in the two poles of the plant cells forms ....
4. Crossing over phenomenon happens between the .... during the meiosis division.

B 1. Copy the figure then draw the rays that form the image of the object.

2. The point (X) refers to ....



C **What is meant by the followings ... ?**

1. Fertilization.

2. The radius of curvature of a mirror.

Question 2

A **Choose the right answer :**

1. When a moving object covers equal distances in unequal intervals of time, so it moves by ....

   a. average speed. b. relative speed. c. uniforms speed. d. irregular speed.

2. The scientist who published a research including his vision about the Nebular assumption ....

   a. Chamberlin. b. Laplace. c. Fred Hoyle. d. Molten.

3. An object was put at 10 cm from a concave mirror, a real, inverted and equal image was formed, if the object moved 3 cm towards the mirror, so the formed image will be ....

   a. real, inverted and diminished. b. real, inverted and enlarged.

   c. virtual diminished. d. virtual enlarged.

4. An observer in a moving car with 80 km/h was observing a moving car with 90 km/h in the same direction so, the observed speed of the 2^{nd} car is ....

   a. 10 km/h. b. 80 km/h. c. 90 km/h. d. 170 km/h.

B **What are the results of the followings ... ?**

1. Falling of parallel peam of light parallel to the principal axis of a convex lens.
2. The meiosis division inside the anther and the ovary of a flower.

C **Name the phase that indicates the following changes during the cell division :**

1. Form two separate groups of chromatids.
2. Disappearing of the nucleolus and the nuclear membrane.

Question 3

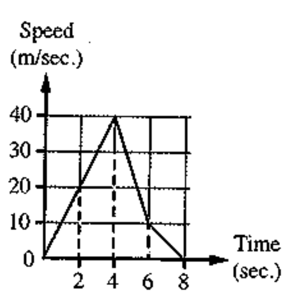
A **Write the scientific term for the following :**

1. Groups of stars gathered in distinctive shape.
2. The ability of some animals to compensate their missing parts.

B **The next graph illustrates the movement of a car, study it and answer the following :**

1. The driver used the brake for the first time at the .... second when the speed value was .... m/sec.

2. Calculate the acceleration of the car through 4 seconds from the starting point.



C **Compare between long-sightedness and short-sightedness concerning the concept and the treatment.**

Question 4

A **Correct the underlined parts in the following :**

1. Amoeba reproduces by **budding**.
2. The formed image of an object that is put at **the centre of curvature** for a convex lens is virtual enlarged.

B **Give reasons for the following :**

1. The sporangium of bread mould fungus must be ruptured during reproduction.
2. The merging of atomic particles that happened during the Big Bang produced stars and the universe.

C **Look at the following figures and answer :**

1. Which of the two figures express the formation of F letter image.
2. The other figure is wrong because .... and ....

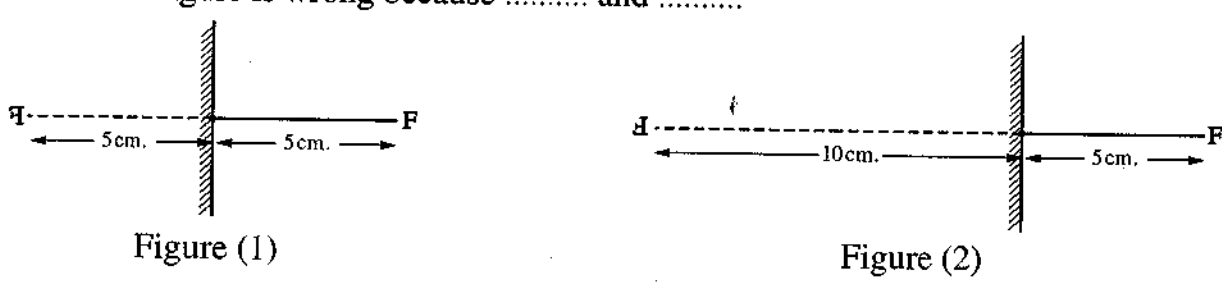


Figure (1)

Figure (2)

4 El-Kalyoubia Governorate

Answer the following questions :

Question 1

A **Write the scientific term for each of the following statement :**

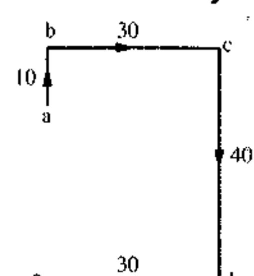
1. The point of connection of the two chromatids in a chromosome.
2. The line that passes through the optical centre of the lens without passing through the two centres of curvature of its faces.

3. The distance between the pole of a spherical mirror and its center of curvature.
4. It's the Sun and eight planets revolving around it.
5. The speed of a moving body that covers equal distances at unequal time intervals.

B What is meant by ... ?

1. The value of the length of the shortest straight line between two positions = 5 m.
2. The relative speed.
3. Spindle fibers during cell division.

C A person moves in the path (a b c d e) as shown in figure, he covered a distance of 10 m. northward in 2 seconds, then he covers 30 m. eastward in 10 seconds. and followed by 40 m. southward in 8 seconds, finally 30 m. westward in 5 sec.



1. Calculate the displacement of the person from the start of motion to end.
2. In which part of the person motion, his speed was the least ?



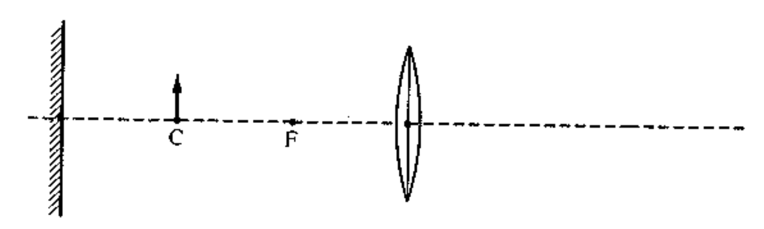
Question 2

A Choose the correct answer :

1. The .... is the phase in which the cell is prepared for division by doubling the genetic material.
   a. prophase b. interphase c. metaphase d. anaphase
2. A concave mirror has a focal length of 8 cm. An object is placed in front of this mirror forming an image at a distance 20 cm from the mirror. This means that the object is placed at .... from the mirror.
   a. 8 cm. b. less than 8 cm.
   c. 20 cm. d. more than 8 cm. and less than 16 mc.
3. A doctor advised a person who has a sight defect to use glasses with convex lenses. It means that this person suffers from ....
   a. a decrease in the convexity of the eye lens surface.
   b. an increase in the convexity of eye lens surface.
   c. an increase in the eyeball diameter.
   d. disability of seeing far objects clearly.
4. Reproduction by spores occurs in all the following organisms, except ....
   a. starfish. b. fungus. c. bread mould. d. mushroom.
5. One of the vector physical quantities is ....
   a. time of a car trip. b. length of a pen.
   c. mass of a cat. d. force by which person pushes a stone.

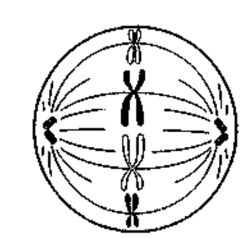
B **In the figure shown, an object is placed at the centre of curvature of one face of a convex lens of focal length 6 cm. Then, a plane mirror is placed at the other side of the object at 8 cm. from the object. Copy the diagram in your answer sheet and answer :**

1. Draw the path of light rays incident on the lens to form an image on a screen in front of the lens.
2. Calculate the distance between the two images formed by the lens and the mirror.



C **The figure in front of you shows a phase of cell division. Answer the following :**

1. What is the type of this division ?
2. What is the name of this phase ?
3. What is the importance of this type of division ?



Question 3

A **Put (✓) in the front of correct statements and (×) in front of the wrong ones :**

1. The solar system includes several galaxies. ( )
2. If the angle between the incidence ray and the reflected ray is 60°, the angle between the reflected ray and the reflecting surface is 60°. ( )
3. The displacement of an object is measured in m/sec. ( )
4. An assumption of the crossing star theory is that a star revolves near the Sun. ( )
5. Bread mould fungus reproduces by binary fission. ( )

B **Give reasons for the following :**

1. Meiotic cell division is called reduction division.
2. A donor for a part of the liver suffers no harm and can survive.

C **A car moved from Banha to Cairo at a distance of 40 km in 30 minutes, then it returns back from Cairo to Banha in the same time. Calculate (in km/h) :**

1. The car velocity from the beginning to the end of the journey.
2. The average speed of the car during the total time.

Question 4

A What would happen in each of the following ... ?

1. Absence of anther from the floral plants.
2. To the value of velocity of a moving object if the time of the same displacement is increased to double.
3. The organization and arrangements of stars in the galaxy were changed.
4. Focusing laser on the gold Nano-particles in the cells infected by cancer.
5. A light ray is incident passing through the center of curvature of a concave mirror.

B Mention the properties of the formed image in each of the following cases :

1. An object is placed in front of a convex mirror.
2. An object is placed in front of a convex lens at a distance less than its focal length.
3. An object placed at the focus of a convex lens.

C A car speeds up from 0 m/s to 10 m/s in 4 seconds, then it slows down to 5 m/s in 2 seconds. Calculate :

1. The acceleration of the moving car in the first stage and the acceleration of the moving car in the second stage.
2. The time taken by the car in the second stage to stop if it moves at the same rate of velocity change.



Answer the following questions :

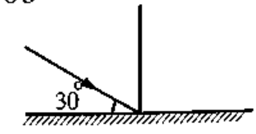
Question 1

A Choose the correct answer :

1. If the uniform speed of a car is (90 km/h). This means that the car covers a distance equals .... metres in 40 sec.

a. 1000 b. 2000 c. 2600 d. 4000

2. A light ray that falls on a plane mirror as in the figure it reflects, where the angle of reflection equals ....



a. 30° b. 60° c. 90° d. 50°

3. The person with normal vision sees the near objects clearly at a distance not less than ....

a. 2 cm. b. 25 cm. c. 6 m. d. 10 m.

4. The ratio between the final speed and the initial speed of an object moves at an accelerating motion is ....

a. more than 1. b. less than 1. c. equal to 1. d. equals to zero.

5. The earliest life forms began to appear on the Earth after .... million years from the Big Bang.

a. 3000 b. 12000 c. 15000 d. 17000

B Define each of the following :

1. Reproduction by sporogony (spore propagation).
2. Fertilization.
3. Average speed.

C A train starts to move at 6 O'clock in the morning. Then what is the time of arrival if it moves at speed of 40 Km/h to cover the distance of 200 Km.

Question 

A Write the scientific term for each of the following :

1. The speed of a moving object relatively to a constant or a moving observer.
2. The mirror, whose reflecting surface is a part of the inner surface the sphere.
3. It contains the Sun and the solar system.
4. Asexual reproduction takes place in some plants without needing seeds.
5. A point inside the lens that lies on the principal axis in the mid distance between its faces.

B Give reasons for :

1. The object that is placed at the focus of a convex lens has not an image.
2. (Distance – Time) graph of an object that moves at uniform speed is a straight line passing through the origin point.
3. Asexual reproduction in living organisms produces individuals identical in genetic structure.

C In the opposite figure :

An object was placed between a convex lens whose focal length is 6 cm. and a plane mirror.

1- Complete the following statements :

a. The image formed of the object by a plane mirror at a distance of .... cm. from it's surface.

b. The image formed of the object by a convex lens at a distance of .... cm. from it's face

c. The distance between the image of the object which is formed by a convex lens and the image which is formed by a plane mirror equal .... cm.

2- Show by drawing the formed image by the convex lens.

Question 3

A Complete the following sentences :

1. In human and animals, meiosis occurs in .... to produce the male gametes, while it occurs in .... to produce the female gametes.
2. Physicists use mathematical relations like .... and .... to predict the relation between certain physical quantities.
3. The vision defect which is due to the decrease in the eyeball diameter is called .... and is corrected by .... lenses.
4. The two factors which can be used to describe the motion of a body are the .... and ....
5. The chemical structure of the chromosome is .... and ....

B Compare between :

1. The real image and the virtual image.
2. Crossing star theory and modern theory (according to the name of scientist and the origin of the solar system).

C Show by drawing and write down the labels :

Interphase in mitosis division.

Question 4

A Correct the underlined words :

1. The spindle fibers are formed in the plant cell from the **centrosome**.
2. The car which begins its movement from rest, moves at **uniform speed**.
3. Chromosomes are arranged at the middle of the cell in the **telophase.**
4. Contact lenses can stick to **eye iris** and can be removed easily.
5. **Acceleration** is the actual length of the path that a moving object takes from the starting point of movement to the end point.

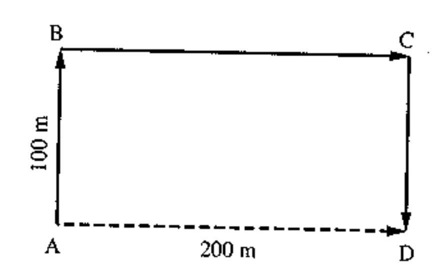
B 1. Show by drawing and write short notes about : Prophase 1 in the first meiotic division.

2. Show by drawing : The relation between (speed – time)

Number of trail	Distance (d) in metre	Time (t) in second	Speed V = d/t (m/s)
1	0.4	5	0.08
2	0.6	7.50	0.08
3	0.8	10	0.08
4	1.0	12.50	0.08

C In the opposite figure :

Two cars moved at the same time from (A) to (D), the first car takes the pass (ABCD) in 20 sec. and the second car takes the pass (AD) with regular speed 20 m/sec.



1. Which of the two cars reach first to point (D).
2. Calculate the velocity of the first car.

6 El-Menofia Governorate

Answer the following questions :

Question 1

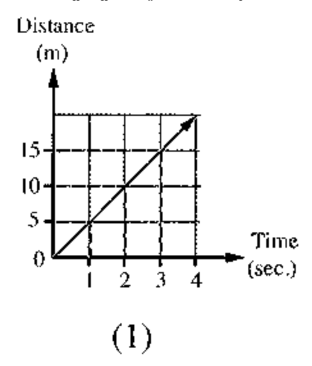
A Choose the correct answer :

1. The ratio between initial speed and final speed for a moving object by increasing accelerations is ....
   a. more than one. b. less than one. c. equal to one. d. equal zero.
2. A short sighted person sees the far objects distorted as their images formed ....
   a. on the retina. b. behind the retina. c. in front of the retina. d. in front of the lens.
3. From examples of the scalar physical quantities is ....
   a. the velocity. b. the mass. c. the force. d. the acceleration.
4. The cell that never divide is ....
   a. adult red blood cells. b. the stomach.
   c. the liver. d. the skin.
5. Paramecium is a protozoan that reproduces by ....
   a. spores. b. budding. c. regeneration. d. binary fission.

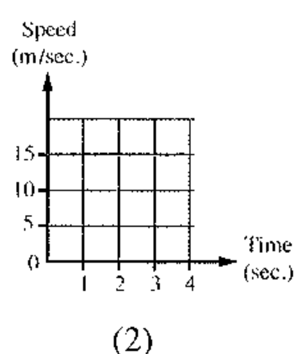
B When each of the following values equal "Zero" :

1. Reflecting angle of a light ray incident on a plane mirror.
2. The velocity of a moving object.
3. Reflecting angle for an incident ray falls on reflecting surface of a cancave mirror.

C The following graphs represent the motion of two trains :



(1)



(2)

1. Describe the motion of the train in figure (2) ?
2. Calculate the speed of the train in figure (1) ?



Question 2

A Write the scientific term for each :

1. Asexual reproduction occurs by different parts of the plant without seeds.
2. A point inside the lens lies on the principal axis in the mid distance between its faces.
3. Are formed of reproductive cell inside living organisms by meiotic division.
4. Is the speed of the moving object relative to the observer.
5. A series of adverse changes occur which lead to the formation of a complete set of chromosomes that have the same number of the mother cell's chromosomes.

B 1. According to your study, copy the following table in your answer sheet and complete it by two applications of (LASER) in our practical life.

(The user)

The application	Who benefits of the application	The importance of the application
1^{st}		
2^{nd}		

2. An object moved (8) meters to east then (5) meters to west, determine :
   The magnitude and the direction of the object's displacement ?

C A thin walled glass sphere its diameter (42 cm.) A suitable part of it was cut. its inner surface was the reflecting surface :

1. What is the type of the mirror produced in the cut part ? find its focal length ?
2. By drawing only show properties of the image formed by using the cutting part of the sphere if an object placed at a distance of (10 cm.) of its pole ?

Question 3

A **Correct the underlined words :**

1. The clear vision for a normal vision person remains, if the object comes closer at a distance not less than **60 cm**.
2. The ratio of number of cells produced due to the 3rd division to number of cells produced due the 2nd division equals $\left(\frac{6}{2}\right)$.
3. A phase where some important biological processes occur to prepare the cell for division is called **prophase**.

B **Give reasons for :**

1. The force is a vector quantity.
2. Wind direction may affect the amount of consumed fuel by the airplane between two cities in going flight than return.
3. Uniform speed for a car hard to done practically.
4. Crossing over phenomenon is an important factor in genetic variation among individuals of the same species.
5. Every galaxy has a definite shape differs of other galaxies.

C **A moving car by a uniform speed covers (80) meters in (4) seconds. Then the driver press the brakes, so it stopped after other (4) seconds. Find :**

1. The magnitude of the acceleration within 1st (80) meters.
2. The magnitude of the acceleration after pressing the brakes.

Question 4

A **Complete the following by suitable words :**

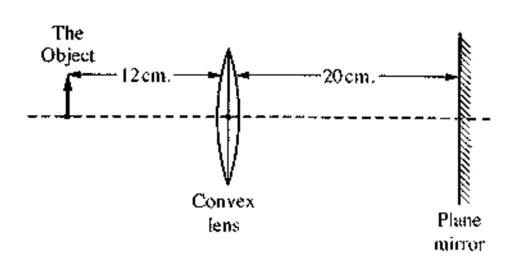
1. Velocity and displacement of an object are similar in .... and for the measuring units they are ....
2. The result of dividing the total distance over the total time to cover it is equal .... and it is equal .... if the object moves by it. The object covers the same distance in the same time.
3. The Big Bang theory explain the origin of ...., while the nebular theory is one of the theories which explain the origin of ..
4. In animal cell spindle fibers formed from ...., while in plant cell spindle fibers form .... at the poles.

B Compare between :

1. The crossing star theory and the modern theory. (in term of the scientist developing the theory)
2. Sexual reproduction and asexual reproduction. (in term of properties of the offsprings)

C In the figure convex lens formed an image for the object at its left side at a distance of (12 cm), and this image is (real – inverted – equal to the object) in front of a reflecting surface of a plane mirror a way of the lens (20 cm).
Conclude each of the following :

1. Focal length of the convex lens.
2. The distance between the object and the image formed by the plane mirror ?
   is the image upright or inverted for the object ?



7 El-Gharbia Governorate

Answer the following questions :



Question 1

A Complete the following statements :

1. The product of the velocity of moving body × the time equal ....
2. The galaxy that solar system belongs to is called ....
3. The image formed by concave lens is always .... erect and diminished.
4. The nucleolus and nuclear membrane disappear at the end of .... of mitosis.
5. The change of an object position as time passes according to the position of another fixed object is called ....

B What is meant by each of the following ... ?

1. Fertilization. 2. Pole of the mirror. 3. Average speed.

C Within 2.5 second, the speed of a car increases from 20 m/s to 25 m/s, while a bike moves from rest and its speed reaches 10 m/s in the same time. Which moves at a greater acceleration ?



Question 2

A Choose the correct answer :

1. The reproduction which considered as a source of genetic variation is .... reproduction.
   a. vegetative b. budding c. sexual d. regeneration

2. Which of the following is considered as scalar physical quantities ? ....

a. Force b. Mass. c. Acceleration. d. Velocity.

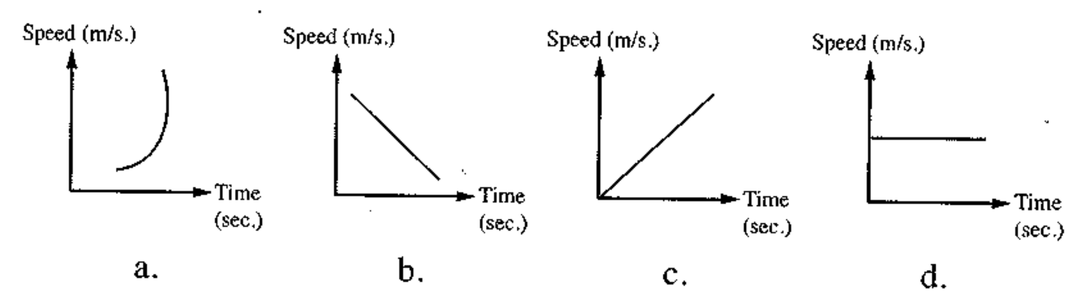
3. The scientist who established the nebular theory is ....

a. Chamberlain. b. Moulton. c. Fred Hoyle. d. Laplace.

4. Crossing over phenomenon happens in the end of first ....

a. prophase b. metaphase c. anaphase d. telophase

5. Which of the following graphs represents the movement of an object at a constant speed ? ....



B Give reasons for :

1. Meiotic division is called by reduction division.
2. Pilots take in consideration the velocity of the wind.
3. The image formed by a plane mirror cannot be received on the screen.

C An object is placed at a distance of 30 cm from a concave mirror with a radius of curvature 40 cm.

1. Calculate the focal length of the mirror.
2. Show by drawing the path of rays that show the formed image in this case.

Question 3

A Correct the underlined words :

1. Velocity is the quantity that we can identify it accurately by knowing its **magnitude only**.
2. Spores are formed in bread mould fungus inside special organs called **buds**.
3. The two gases which are produced galaxies, stars and universe over millions of years are **oxygen and nitrogen**.
4. If an object is put in front of concave mirror at **focus,** the formed image is real, inverted and equal to the object.
5. When a moving object covers unequal distances at equal periods of time so, it moves with **non-uniform acceleration**.

B What would happen when ... ?

1. A light ray passes through the optical center of the lens.
2. Putting a yeast fungus in a warm sugary solution.
3. The initial speed of the moving body is greater than the final speed.

C Compare between each of the following :

1. Short-sightedness and long-sightedness (according to the position of the formed image).
2. Asexual reproduction and sexual reproduction (according to the number of parents).



Question 4

A Write the scientific term :

1. The distance covered in a certain direction.
2. The nucleic acid that carries the genetic traits of the living organisms.
3. The speed of the moving object relatively to a constant or moving observer.
4. An equipment was launched to the space, allows astronomers an opportunity to study the evolution of the universe.
5. The rebounding of the light to the same side when it strikes a reflecting surface.

B Mention the importance of each of the following :

1. Speedometres in the car.
2. Nano-molecules of gold.
3. A convex mirror which is put at the left side of the driver of the car.

C Two cells are divided, one of them in the plant stem and the other in the plant ovary, if you know the number of chromosomes in each of them is 6 pairs of chromosomes, mention :

1. The kind of cell division in each cell.
2. The number of chromosomes in each resulted cell.

8 El-Dakahlia Governorate

Answer the following questions :



Question 1

A Choose the correct answer :

1. The accurate definition of the speed is the distance covered through ....
   a. the time. b. a unit time. c. an hour. d. a minute.
2. (Speed - time) graph for a regular motion at a constant speed is a straight line is ....
   a. curved. b. passing by the origin point.
   c. parallel to x-axis. d. parallel to y-axis.

3. When an object is placed to face a convex mirror, the image formed is ....
   a. lies behind the mirror. b. is real. c. is erect. d. (a) and (c).
4. Fred Hoyle relates controlling the Sun in the orbits of the planets around it to .... of the Sun.
   a. temperature b. rotation speed c. attraction force d. glowing
5. The chemical structure of the chromosome is ....
   a. the nucleic acid only. b. protein and nucleic acid.
   c. protein, fats and nucleic acid. d. all the previous.

B Pierre Simon Laplace is affected by two observations during the assumption of the nebular theory, mention them.

C A runner covered a distance of 60 meters of a straight track in 10 seconds, and then he returned back walking. He took 50 seconds to come back to the starting point of running. Calculate the runner's average speed :

1. While running. 2. While returning. 3. During the whole trip.

Question 2

A Complete the following sentences :

1. The contact lenses are used instead of the .... and it is made of ....
2. The convex lens .... the light, while the convex mirror .... the light.
3. The force is considered .... physical quantity, while the distance is considered .... physical quantity.
4. The solar system is located in one of the spiral arms of the .... on the ....
5. There are two types of reproduction in living organisms which are .... and ....

B Compare between : reproduction by budding and reproduction by sporogony according to site of occurrence and give examples for each.

C Two cars move in the same direction, if the speed of the first car is 50 km/h and the second car is 70 km/h. Calculate the relative speed of the second car relative to an observer :

1. Standing on the ground. 2. Sitting in the first car.
3. What are you conclude from the resultants.

Question 3

A Write the scientific term of each of the following :

1. The regular speed by which the moving object moves to cover the same distance at the same period of time.

2. The change of the object speed by equal values through equal period of time.
3. Bouncing of the light to the same side when it strikes a reflecting surface.
4. The ability of some animals to compensate their missing parts.
5. The point inside the lens on the principal axis in the mid distance between its faces.

B Show by drawing what happen in anaphase 1 for meiosis division.

C A car moves at speed 40 m/sec. If the driver used the brakes to decrease the speed so, it decreases by 2 m/sec². Calculate its speed after 15 seconds from using the brakes.

Question 

A Correct the underlined words :

1. When an object is placed at **the center of curvature** of a concave mirror, its formed image is real, inverted and enlarged.
2. **Crossing star** is a glowing gaseous sphere revolving around itself, from which the solar system was originated.
3. **Concave mirror** is a transparent medium that refracts the light and is limited with two spherical surfaces.
4. **Average speed** is the speed of a moving object relative to a constant or a moving observer.

B Give reasons for :

1. The word ambulance is written in a laterally inverted way on the ambulance car.
2. The short-sightedness is corrected by using a concave lens.
3. The lens had two foci, while the spherical mirror has one focus.
4. Cellular division begins with interphase before starting mitosis division.

C Show scientific reason for each of the following :

1. The angle of reflection of a light ray fall perpendicular on a plane mirror = zero.
2. A body moves at zero acceleration.

9 Ismailia Governorate

Answer the following questions :

Question 

A Complete the following sentences :

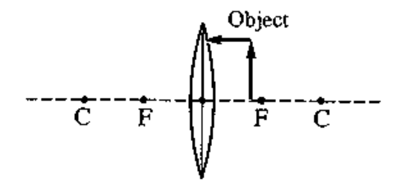
1. The movement path in one direction may be ...., ... or a combination of both.
2. Force is considered .... physical quantity, while mass is .... physical quantity.
3. The cell .... contains the genetic material of the living organism which consists of a number of ....



B **What are the results of each of the following :**

1. Less convexity of eye lens surfaces.
2. Rupturing of the sporangium of bread mould fungus.

C **In the opposite figure :**



1. Complete the path of the rays to form an image for the object.
2. Mention the properties of the formed image.

Question 2

A **Write the scientific term for each of the following statements :**

1. The value of a moving object's speed relatively to a constant or a moving observer.
2. The covered distance at a certain direction.
3. The straight line that passes by center of curvature of the mirror and its pole.
4. A glowing gaseous sphere formed the planets of the solar system.
5. The total distance covered by a moving object divided by the total time taken to cover this distance.

B **In the opposite figure :**

Zero 2m. 4m.
A C B

A person moves from point (A) to point (B), then changes his direction to point (C) through 10 seconds, Calculate :

1. The total distance covered by the person.
2. The displacement done by the person.
3. The velocity.

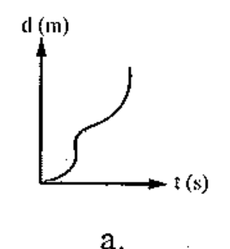
C **Compare between :**

Crossing star theory and the modern theory according to assumption of each about the origin of the solar system.

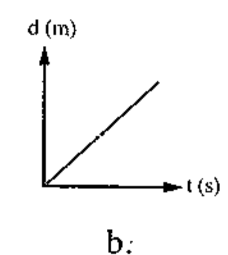
Question 

A **Choose the correct answer :**

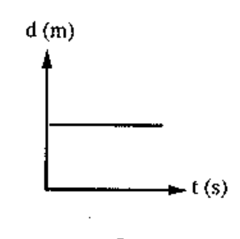
1. The graph .... represents the movement of a body at a constant speed.



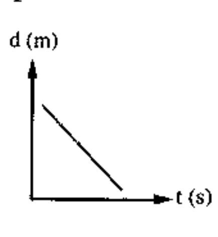
a.



b.



c.



d.

2. From the properties of the image formed by a convex mirror is ....
   a. virtual. b. real. c. upright. d. (a) and (c) together.
3. Chromosomes of reproductive cells are doubled in the interphase before .... division.
   a. first meiosis b. second meiosis c. mitotic d. no correct answer.
4. If a person stands at a distance 2 m from a plane mirror, the distance between the person and his image is ....
   a. 1 m. b. 2 m. c. 3 m. d. 4 m.
5. The value of change of an object speed in one second is called ....
   a. velocity. b. displacement. c. acceleration. d. speed.

B The opposite figure represents the crossing over phenomenon, Answer the following :

1. What happens in this phenomenon ?
2. What is the name of the phase in which this phenomenon occurs ?
3. Draw the following phase to the phase in which this phenomenon occurs.

C Mention only one use for each of the following :

1. The contact lenses. 2. The solar telescope.

Question 4

A Rewrite the following statements after correcting the underlined words :

1. Radius of mirror curvature = $\underline{\frac{1}{2}}$ × the focal length.
2. The chromosome consists of two chromatids connected together at the **nucleus**.
3. The speed of a car can be identified directly by using the **compass**.
4. In the universe, groups of **planets** are gathered to form the galaxies.

B Give reasons for :

1. The lens had two centers of curvature (C_1 and C_2).
2. The moving body with acceleration cannot move with regular speed.
3. Binary fission is considered a mitotic division.

C Choose from column (B) what suits column (A) :

(A)	(B)
1. Reproductive cells	a. in which mitotic division occurs.
2. Plant cells	b. produce gametes.
3. Somatic cells	c. in which the spindle fibers is formed from the cytoplasm.
	d. contain a haploid number of chromosomes.

10 Suez Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The movement path may be .... or .... or both of them.
2. When the object lies in front of .... lens, a virtual and diminished image is formed.
3. The yeast fungus reproduces by ...., while the starfish reproduces by ....

B When does this happen ... ?

1. The acceleration of a moving object = zero.
2. The displacement of an object = the distance that the object moved.
3. The person suffers from short-sightedness.

C There are two types of cell division. One of them includes the following Phases :

(Anaphase - Metaphase - Telophase - Prophase)

1. What is the type of division that include these phases.
2. Arrange the previous phases according to the sequence of their occurrence.

Question 2

A Choose the correct answer :

1. The number of chromosomes in the gamete is .... the number of the chromosomes in the original cell.

   a. quarter. b. half. c. double. d. equals.

2. Our solar system is located in one of the .... arms of the Milky way galaxy.

   a. spiral b. straight c. circular d. oval

3. The reproduction which considered as a source of genetic variation is a .... reproduction.

   a. budding. b. vegetative c. sexual d. asexual

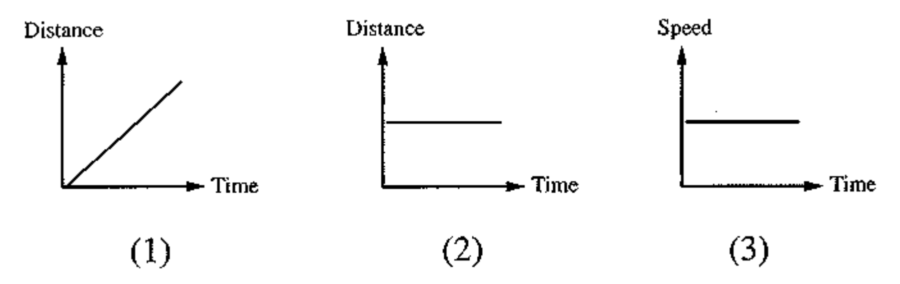
4. The distance from the center of mirror curvature and its focus equals ....

   a. radius of curvature. b. quarter of the diameter of curvature.
   c. dimeter of curvature. d. half of the focal length.

5. From the scalar quantities ....

   a. the time. b. the force.
   c. the acceleration. d. the displacement.

B Describe the case of the body in each of the following graphs :



C What happens in the following cases :

1. Explosion of the expanded part from the Sun towards the crossing star (according to the crossing star theory).
2. The combination of the male gamete and female gamete.

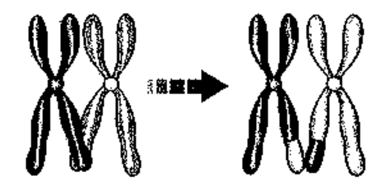
Question 3

A Write the scientific term for the following :

1. Changing the position of an object as the time passes according to the position of another fixed object.
2. A point located inside the lens and lies on its principal axis.
3. The speed of the moving object relative to the observer.
4. It contains all the galaxies, stars, planets and living organisms.
5. It's a mirror that its reflecting surface is a part of a hallow sphere.

B 1. What is the name of this phenomenon in front of you ?

2. What is the importance of its occurrence.
3. Mention the name of the phase that this phenomenon occurs ?



C A driver used brakes to stop the car moved by 20 m/sec. Calculate the time taken by the car to stop. Given that the car moved with a decelerating motion equals 2 m/sec^2

Question 4

A Correct the underlined words :

1. When the light ray falls by an angle of <u>30°</u> on the reflecting surface, so the reflected ray will be perpendicular on the reflecting surface.
2. The parent individual disappears during the reproduction by <u>**sporogony**</u>.
3. The measuring unit of the speed is <u>**meter/second^2**</u>.

4. **Relative speed** represents the regular speed by which the moving object moves to cover the equal distance at the same period of time.
5. The universe emerged from the particles of **oxygen and nitrogen**.

B **An object is put at a distance of 4 cm.** from the optical centre of a lens a (real - magnified) image is formed for the object and when the object moved a distance of 2 cm away from the lens a (real-equal to the object) image is formed.

1. What is the kind of the lens ?
2. Draw the path of the rays that formed the image when the object was at a distance of 4 cm from the optical centre of the lens ?

C **Give reasons for :**

1. When you look at the mirror you see your face image.
2. There are no new species of grapes when they reproduce by vegetative reproduction.



11 Port Said Governorate

Answer the following questions :

Question  1

A **Replace each of the following statements by a scientific term :**

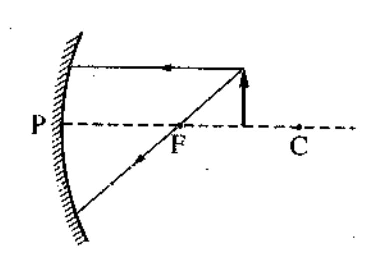
1. The change in the position of an object by the time relative to a reference point.
2. It contains the Sun and the solar system.
3. The mid-point on the reflecting surface of the mirror.
4. The part in the cell which is responsible for cellular division.
5. The incident light ray, the reflected light ray and the normal line all lie in the same plane perpendicular to the reflecting surface.

B **Compare between :**

1. Distance and displacement in terms of definition and type of the physical quantity.
2. Galaxy and solar system in terms of definition.

C **Draw the figure in your answer paper, then :**

1. Complete the path of the incident rays on the mirror from the object.
2. Mention the characteristics of the formed image and its position.



Question 2

A Correct the underlined words :

1. The spindle fibers in the animal cell is formed from **condensing the cytoplasm**.
2. The lens is a transparent medium that **reflects** the light.
3. In plane mirror the object distance from the mirror is **larger than** the image distance.
4. **Asexual** reproduction is a source of genetic variation.
5. The Sun takes about **250** million years to complete one rotation around the center of the galaxy.

B What is meant by ... ?

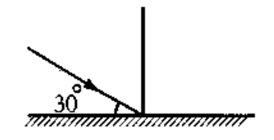
1. A car moving at a uniform speed = 80 km/hour.
2. The focal length of a concave mirror = 7 cm.
3. The average speed of a moving car = 70 km/hour.

C Within 2.5 seconds the speed of a car increases from 20 m/s to 25m/s, while a bike moves from rest and its speed reaches 5 m/s in one second. Calculate the acceleration of the car and the acceleration of the bike ?

Question 3

A Choose the correct answer :

1. Examples of scalar's physical quantities ....
   a. mass & force. b. force & acceleration.
   c. mass & distance. d. force & time.
2. The two gases which produced galaxies, stars and universe through millions of years are ....
   a. oxygen & helium. b. helium & hydrogen.
   c. oxygen & carbon dioxide. d. helium & carbon dioxide.
3. .... reproduces by budding.
   a. Amoeba b. Starfish c. Sponge d. Mushroom
4. A light ray falls on to a plane mirror as in the figure it reflected, where the reflection angle equals ....



   a. 30 b. 60 c. 20 d. 90

5. The universe contains ....
   a. galaxies & stars.
   b. planets and moons.
   c. living organisms.
   d. all the previous.

B Give reasons for :

1. On their flights, pilots take into consideration the velocity of the wind.
2. The universe is in continuous expansion.
3. Cataract disease infects the eye.

C The opposite figure represents one of the division phases :



1. What is the name of this phase and the type of division ?
2. What is the name of next phase that follow it.

 Question 4

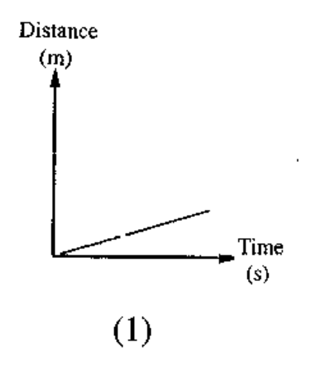
A Complete the following sentences :

1. The .... scientist established the modern theory of evolution of the solar system.
2. Measuring the relative speed depends on the position of the .... who determines the magnitude of this speed.
3. The Egyptian scientist Mustafa El Said discovered a way to detect the cancer cell by using ....
4. A short-sighted person needs a medical eye glasses with .... lenses.
5. The chromosome chemically consists of nuclear acid called DNA and ....

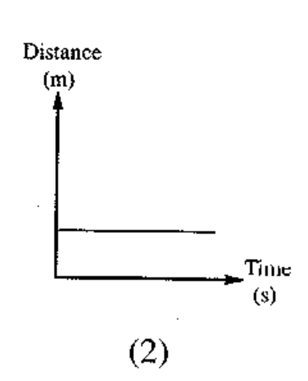
B What happens when ... ?

1. A light ray passes through the optical center of a convex lens.
2. The nebula gradually lost its heat (from point of view of Laplace scientist).
3. A plane mirror is placed at the left side of the driver instead of the convex mirror.

C Describe the motion of the object in each of the following graph :



(1)



(2)

12 Damietta Governorate

Answer the following questions :



A Choose the right answer :

1. Spindle fibers appear during the cell division in the ....
   a. telophase. b. interphase. c. prophase. d. metaphase.
2. The solar system is located in one of the .... arms of the "milky way" galaxy.
   a. spiral b. oval c. straight d. circular
3. If speed of a car is 72 km/hour this means that his speed equal .... m/sec.
   a. 50 b. 10 c. 15 d. 20
4. When an object acceleration equal zero this means that ....
   a. the body acceleration is decreasing. b. the body speed is variable.
   c. the body acceleration is increasing. d. the body speed is uniform.

B Mention one the importance for each of the following :

1. Speedometer. 2. Interphase.

C Show by drawing and write the labels :

The properties of the formed image for an object located in front of a convex lens between the focus and center of curvature.

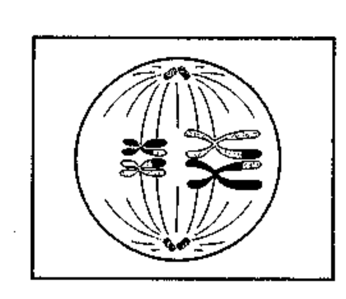


A Write the scientific term :

1. The combination of a male gamete and a female gamete to from a zygote.
2. The total distance covered by the moving object divided by the total time taken to cover the distance.
3. The space which contains all the galaxies, stars, planets and living organisms.
4. A type of asexual reproduction that occurs in simple algae.

B The opposite figure :

Represents one of the phases in a meiotic division



1. What is the name of this phase ?
2. Draw the diagram of the following phase ?
   ,What is the name of this phase.



C What happens when ... ?

1. The liver gets injured or apart of it is cut.
2. Elongation in the ball of the eye more than the normal situation.

Question 3



A Give reasons for :

1. Sexual reproduction is a source of genetic variation.
2. Pilots take in consideration the velocity of the wind.
3. There are no new races (new individual with other trait) of plants, when they reproduce by vegetative reproduction.
4. Displacement is vector physical quantity.

B What is meant by ... ?

1. The displacement of an object is 60 meters in west direction.
2. The distance between the focus of the concave mirror and its pole equal 10 cm.

C Compare between :

1. Acceleration and deceleration (according to definition).
2. The crossing star theory and the modern theory (according solar system was originally).

Question 4

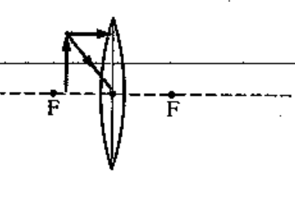


A On a straight line there is a moving bus whose speed changes from 6 meters/sec to 12 meters/second during a period of three second. What is value of acceleration ?

B Rewrite the following statements after correcting the underlined words :

1. If two cars moving in the same direction at the same speed equal 120 m/sec., so the relative speed equal **60 m/sec**.
2. **The scientist Isaac Newton** published a research entitled "world order" and that was in 1796.
3. **Mitotic cell division (mitosis)** amis to produce gametes.
4. Yeast fungus reproduce asexually by **regeneration**.

C Draw the figure in your answer paper then complete to obtain virtual, upright and enlarged image for the object.



13 Kafr El-Sheikh Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The solar system is located in one of the .... of the Milky Way on the edge of the galaxy and the Sun takes about .... year to complete one rotation around the center of the galaxy.
2. The spindle fibers in the animal cell is formed from ...., while in the plant cell the spindle is composed form the .... at the cell poles.

B What is the relation between the genetic structure for each of offspring and parents in the following cases :

1. Binary fission in paramecium.
2. The offspring resulting from the sexual reproduction.

C Explain what happens in the following cases :

1. The integration of the male gamete and female gamete.
2. Place the object in front of a concave lens.
3. The object placed in front of a convex mirror.
4. The nebula gradually lost its heat in the view of Laplace.

Question 2

A Write the scientific term of the following sentences :

1. A phase in which some important vital processes occur to prepare the cell for division and the amount of genetic material duplicates.
2. Is the straight line that passes by the pole of the mirror and it's center of curvature.
3. It is the ability of some animals to compensate their missing parts.
4. It is a theory that explains the origin of the universe from a massive explosion since 15000 million years.

B Show by drawing only of the image equal to the object by means of a convex lens.

C **Complete the missing in the following table :**

Speed (meter/s)	Distance (meter)	Time (second)
....	100	5
5	....	10
8	96	....

Question 3

A **Identify the name of the division phase in which the following cases occur :**

1. Chromosomes pairs arrange in the cell's equator.
2. Crossing over phenomenon.

B **Compare between of the following :**

1. Mitosis and meiosis division (purpose only).
2. Average speed and relative speed (concept only).

C **Within 2.5 seconds the speed of the car increases from 20 m/sec to 25 m/sec, while a bike moves from the rest and its speed reaches 5 m/sec in one second, which of them moved at a greater acceleration.**

Question 4

A **Choose the correct answer :**

1. The scientist who founds modern theory of the world is ....
   a. Fred Hoyle. b. Laplace c. Moulten.
2. The two factors in which the movement of an object can be described ....
   a. speed and time. b. distance and time. c. area and time.
3. Property of the image of the object formed by the plane mirror always be ....
   a. larger than the object. b. equal to the object.
   c. smaller than the object.
4. A convex lens has a focal lenth of 50 cm. an object is places at a distance of 80 cm. from the lens, the image of the object is formed at a distance ....
   a. greater than 100 cm. b. equal to 100 cm. c. equal to 50 cm.

B **Give reasons for the following :**

1. The constancy of the planets in their orbits around the Sun.
2. The concave lens is used to treat a short-sightedness person.

C **When the following occurs ... ?**

1. The object moves at zero acceleration.
2. The incident light ray reflects back on itself when falling on a concave mirror.

14 El-Behira Governorate

Answer the following questions :

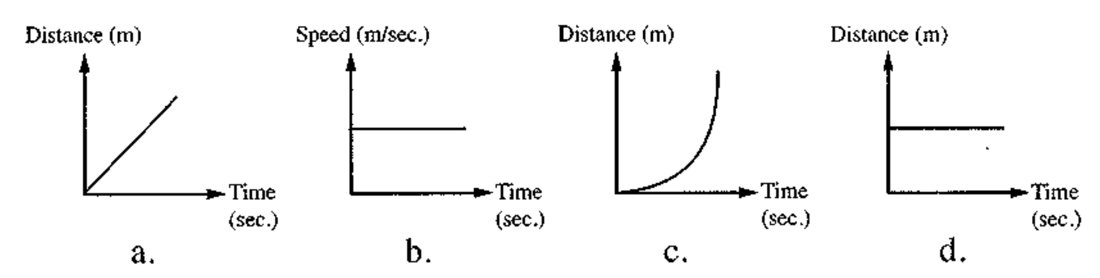
Question 

A **Choose the correct answer :**

1. A person stands in front of a plane mirror at a distance of 3 meter, so the distance between him and his image is .... meter.

   a. 3 b. 4 c. 5 d. 6

2. Which of the following graphs describes the movement of an object moves with acceleration ? ....



3. **In the opposite figure :**
   The value of angle of reflection for the incident light ray is ....

   F C

   a. 90° b. 45°
   c. zero° d. 30°

4. If the cell of muscles in a female rabbit contains 22 pairs of chromosomes, so the number of chromosomes in one cell of its ovary equal ....

   a. 11 b. 22 c. 44 d. 88

5. The scientists believe that the universe emerged from massive explosion and it is in ....

   a. continues contraction. b. contraction then expansion.
   c. expansion then contraction. d. continues expansion.

B **A speed of a car increased from 10 m/sec to 20 m/sec during 5 seconds, at the same time a bike started movement from rest and its speed reached 10 m/sec. Which one of them moved at a greater acceleration ?**

C **Write the name of this phase, and mention :**

1. When this phase happens ?
2. Why the cell passes through this phase ?

Question 2

A **Write the scientific term for each of the following :**

1. The mass of cells which result from the abnormal cell when it is continually divided without controlling.
2. Biological process where the living organism produces new individuals of the same kind and thus, ensuring its continuity.
3. It is the speed of a moving object relative to a constant or a moving observer.
4. It is a very thin plastic lenses and can stick to the eye cornea.
5. It is the regular speed by which the object moves to cover the same distance at the same period of time.
6. A mirror whose reflecting surface is the outer surface of a sphere and diverges the light rays.

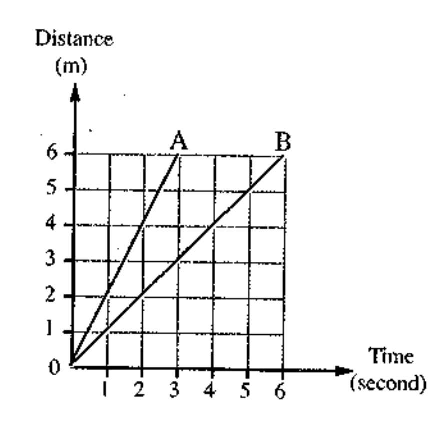
B **For which type of celestial bodies, each of the following belongs :**

1. The Earth. 2. The Milky Way.

C **The opposite graph represents the (distance - time) graph for the movement of two objects A , B**

From the graph, answer the following :

1. What is the kind of speed of the two objects ?
2. Calculate the ratio between the speed of object A and the speed of object B



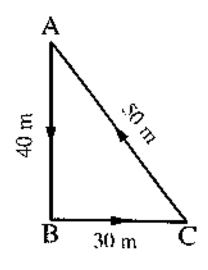
Question 3

A **Complete the following sentences :**

1. Galaxies began to from after .... years after the Big Bang.
2. From the examples of the multicellular organisms reproduced by budding is ....
3. The point that lies in the middle of the reflecting surface of the concave mirror is called ....
4. The displacement covered by a body in one second is called ....

5. **In the opposite figure :**

   A body starts its motion from point (A) to point (B), then to point (C), then returned to point (A), so the displacement covered equals .... metre.

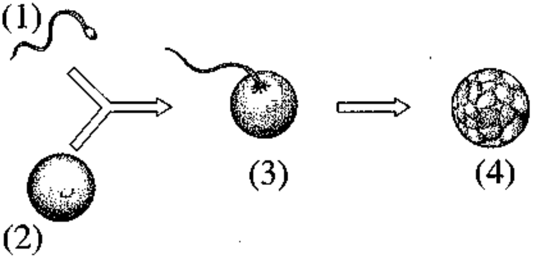


B When the following cases happen ... ?

1. The distance covered by an object equals the magnitude (amount of) displacement happened.
2. Formation of a real, inverted and equal image for an object that is placed in front of a concave mirror.

C The opposite figure represents one of the important process to complete the reproduction.

Answer the following :



1. What is the name of the process that number (3) refers to and what is the name of the produced cell ?
2. What is the importance of forming the cell number (3) ?
3. What is the kind of division in part (4) ?
4. What is the number of chromosomes in the cell number (1) ?

Question  4

A Give reasons for :

1. The short-sightedness is corrected using a concave lens.
2. Mass is a scalar quantity, while force is a vector quantity.
3. The word "AMBULANCE" is written laterally inverted way on the ambulance car.
4. No harmful effect happens for the donor person in liver transplantation.

B What are the results of ... ?

1. The gaseous cloud subjected to cooling and contraction processes "In Fred Hoyle theory".
2. The Euglena cell divided by three successive mitosis divisions.
3. The exchange of genes between two homologous chromosome's chromatids.

C An object is placed at a distance of 5 cm from a convex lens its focal length is 3 cm. Show by drawing the position of the formed image and mention the properties of this image, by drawing two light rays only.

15 El-Fayoum Governorate

Answer the following questions :

Question 

A Complete the following sentences :

1. Speed measuring unit is ...., while the measuring unit of acceleration is ....
2. The crossing over phenomenon occurs in .... of .... division.
3. .... and .... are types of spherical mirrors.
4. The Sun and the planets revolving around it, rotate around the center of .... galaxy.
5. Force is a .... physical quantity, while mass is a .... physical quantity.

B What's meant by ... ?

1. Angle of incidence. 2. Regular (uniform) speed. 3. The pole of the mirror.

C "A car starts movement from rest until its speed reaches 25 m/s after 10 seconds."

1. Calculate the value of acceleration. 2. What kind is the acceleration ?

Question 

A Write the scientific term for each of the following statements :

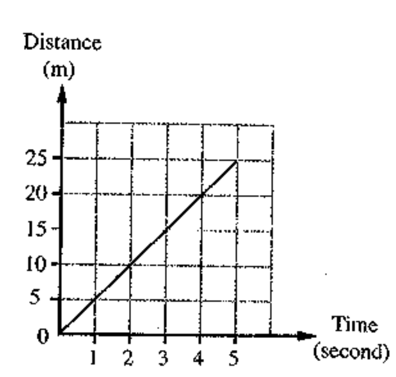
1. The combination of the male gamete and the female gamete to form zygote
2. A disease that infects the eye lens and it becomes opaque.
3. A vector quantity that equals the displacement in one second.
4. Ability of animals to compensate their missing parts.
5. The distance that light travels in a year.

B What happens in the following cases :

1. If an object moves at a regular speed, what is the value of its acceleration ?
2. When there is elongation in the ball of the eye.

C An object moves according to the graphical relation shown in the opposite figure, calculate :

1. The speed of the object's motion and mention its kind.
2. The time that the object takes to cover a distance of 15 meters.
3. The distance that the object covers in 4 seconds.



Question 3

A Choose the correct answer :

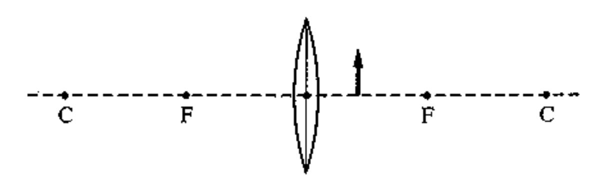
1. A human being stood in front of a plane mirror at a distance of 2 meters, so the distance between him and his image is ....
   a. 1 meter. b. 2 meters. c. 3 meters. d. 4 meters.
2. Meiotic division in flowering plants occurs in the anther to produce ....
   a. ovum. b. chromosome. c. pollen grains. d. sperm.
3. Within minutes of the Big Bang, the percentage of hydrogen in the universe was ....
   a. 25% b. 50% c. 75% d. 100%
4. If the speed of a car is 36 km/h , it means that its speed is .... m/sec.
   a. 10 b. 20 c. 40 d. 80
5. The spindle fibres appears during the cell division through the ....
   a. telophase. b. interphase. c. prophase. d. metaphase.

B Give reasons for :

1. The moving car seems stable to the observer who moves at the same speed and direction.
2. The cell passes through interphase before starting meiotic division.
3. Pilots take in consideration the velocity and the direction of the wind.

C In the shows figure :

1. Complete the ray to get the image.
2. Mention the properties of the image.



Question 4

A Correct the underlined words :

1. The lens is a transparent medium that **reflects** the light and defined with two spherical surfaces.
2. If the object's speed decreases by time, it is called **acceleration**.
3. Amoeba reproduces by **Budding**.
4. **Mitotic** division leads to form gametes.
5. The scientist who found the modern theory about the evolution of the solar system is **Laplace**.

B Mention one usage for each of the following :

1. The speedometer.
2. Nano-molecules of gold.

C "Two cells divide, one in a human female stomach and the other in her ovary" Mention :

1. The type of the division in each of the two cells.
2. The number of the cells produced from the stomach cell division.

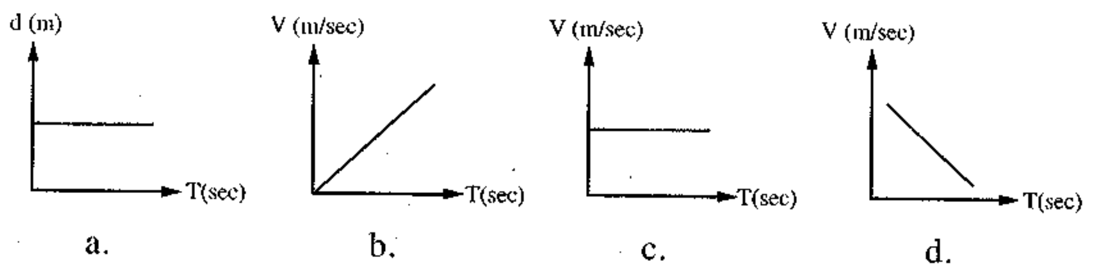
16 Beni-Suef Governorate

Answer the following questions :

Question 

A Choose the correct answer :

1. The distance and displacement are equal when the body moves in a .... in one direction.
   a. zigzag b. circular c. straight line d. curved
2. The following cells containing complete genetic material except ....
   a. germs. b. bud. c. zygote. d. pollen grain.
3. If the distance between two centers of curvatures to the lens is 20 cm. so its focal length equal ....
   a. 5 cm. b. 10 cm. c. 15 cm. d. 20 cm.
4. The ratio between final and initial speed for moving body with accelerating motion ....
   a. more than one. b. less than one. c. equal to one. d. equal zero.
5. Which of the following graphs represents object moves with constant speed : ....

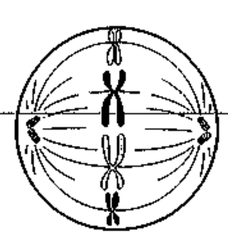


B Compare between each of the following :

1. Distance and displacement (as in type of physical quantity).
2. Crossing star theory and modern theory (as in origin of the solar system).
3. Somatic cell and reproductive cell (as in number of produced cells when cell division takes place in each of them).

C Through your study the stages of mitotic division answer the following :

1. Name the phase that preceding this phase the figure.
2. In which phase the centromere of each chromosome is split lengthwise into two halves ?
3. In which phase the spindle fibers disappear ?
4. What the importance of interphase ?



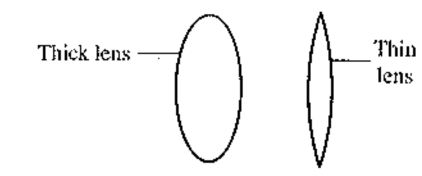
Question 2

A Correct the underline words :

1. Meiotic division aims to **growth of living organisms**.
2. Light rays is **passing** when falling on reflected surface.
3. The old stars are gather in the **edges** of the galaxy.
4. The word ambulance is written on ambulance cars **minimized**.
5. Number of chromosomes in an ovum cell containing **double** number of chromosomes in the one of liver cells.

B Mention the following :

1. Theory that explain origin of universe.
2. What is meant by the average speed of moving car 70 Km/h
3. **In the opposite figure :**
   Which one of these lenses has largest focal length ?



C If an object moves from rest regularly until its speed reaches to 12 m/sec after 2 sec from the start of moving so :

1. The change of speed through 2 sec = ... m/sec.
2. Acceleration = ... m/sec^2

Question 3

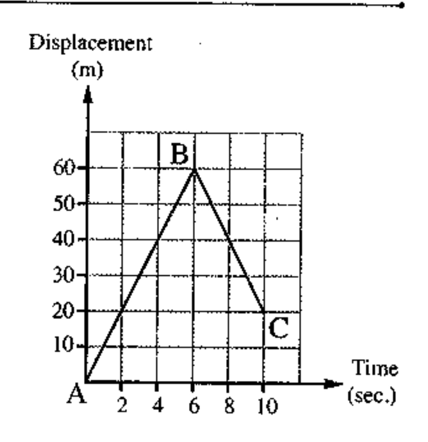
A Complete the following with suitable words :

1. From the multicellular organisms that reproduce by budding is ....
2. .... reproduction doesn't required neither special systems nor structures in the living organisms.
3. .... are used instead of medical glasses to treat vision defects.
4. When the object is placed at .... of the convex lense, there is no image will be formed.
5. The moving car with 50 Km/h in constant direction its speed appears at 110 Km/h related to observer moves with 60 Km/h in .... direction of the car motion.

B What would happen in the following cases ... ?

1. Light ray that falls passing through center of curvature of the mirror.
2. A plane mirror is placed at the left side of the drivers instead of the convex mirror.
3. The parts of the inner chromatids are exchanged in the first prophase.





C **In the opposite figure, that represents the movement of an object from point (A) to point (C) passing by point (B), Calculate the following :**

1. Speed.
2. Velocity.



Question 4

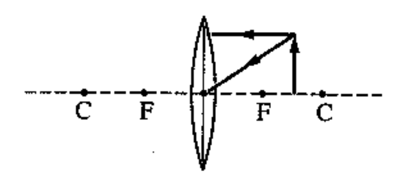
A **Write the scientific term :**

1. Chemically consists of DNA and protein.
2. Change of object position as time passes according to the location of another object.
3. A physical quantity that represents change in the object speed in unit time.
4. A method used by physicists to predict the mathematical relation between physical quantities.
5. It containing genetic materials from both parents and during growth it gives new individuals carries the traits of both parents.

B **Give reasons for :**

1. It's hard to measure the regular speed of a car practically.
2. The Sun escaped from the gravity of the huge star in the crossing star theory.
3. The number of chromosomes is constant in the same species which reproduce sexually.

C **Transfer the following drawing to your answer sheet, then complete the direction of rays, then mention the properties of formed image.**



17 El-Minia Governorate

Answer the following questions :

Question 1

A **Choose the correct answer :**

1. Amoeba reproduce by ....
   a. binary fission. b. gametes. c. regeneration. d. buding.
2. Scientists believe that the matter of the universe was a .... ball of high pressure and high temperature.
   a. liquid b. solid c. gaseous d. no correct answer

3. When an object is placed between the focus of a convex lens and its center of curvature, the formed image will be ....
   a. real, inverted and diminished.
   b. real, inverted and magnified.
   c. virtual, erect and magnified.
   d. virtual, erect and diminished.

B Mention the name of the scientist who :

1. Put the nebular assumption theory about the evolution of the solar system.
2. Discovered a way to use Nano-molecules of gold to detect the cancer.
3. Used the way of concentrating the Sun rays to destroyed the Roman fleet in 212 B.C.

C In a race, a runner moves at a regular speed of 10m/sec. from the start of the race to the fifth second and there was a car that moves beside him, the speed of the car increases from zero to 25 m/sec. in 5 seconds also.

(a) Draw a graph (speed - time) and record on it.

(1) the movement of the runner.

(2) the movement of the car.

(b) Use the previous graph to calculate :

(1) the distance covered by the runner.

(2) the time in which the speed of the runner is equal to the speed of the car.

Question 2

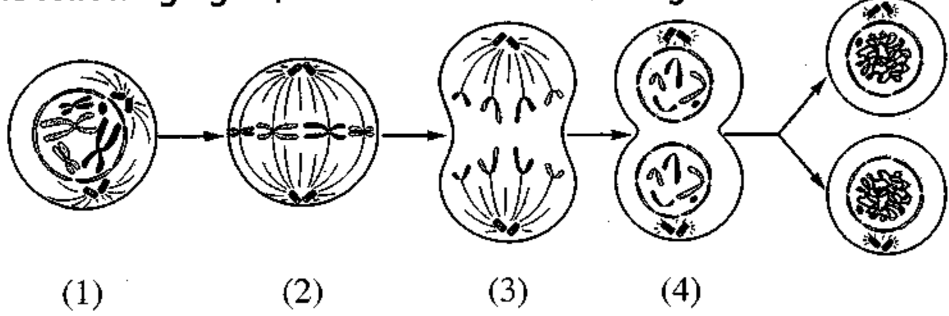
A Write the scientific term of the following :

1. Fibers extend between the two poles of the cell in prophase.
2. The change in the position of a body by the time related to the position of another body.
3. The image that cannot be received on the screen.
4. A theory assumed that the solar system was originally a big star which is the Sun.

B Mention the importance for the following :

1. A convex mirror is put at the left side of the driver of the car.
2. The direction of the wind affects the velocity of aircraft (plans).

C Look at the following figure, then answer the following :



1. What is the kind of cell division in this figure ?
2. What is the name of phases number (2) and (3).
3. What will disappear in phase number (1).

Question 3

A Give reasons for :

1. In short-sightedness, the retina is far from the eye lens.
2. The importance of interphase in the cellular division.
3. The object which moves at regular speed, its acceleration equals zero.
4. The constancy of the planets in their orbits around the Sun.

B What happens when ... ?

1. If the liver gets injured or a part of it is cut.
2. A light ray passes through the optical center of the lens.

C Two trains move parallel to each other but in opposite direction the speed of the first train 65 km/h. and the speed of the second train is 85 km./h. Calculate the speed of the first train that observed by passengers in the second train.

Question 4

A Correct the underlined words :

1. **The force** is the length of the shortest straight line between two position.
2. It is a cell produced due to fertilization called **tetrad**.
3. **The lion** is considered one of the fastest wild animals.
4. The chromosome chemically consists of nuclear acid called DNA and **starch**.

B What is meant by ... ?

1. Crossing over phenomenon.
2. Vector physical quantities.

C Show by drawing the pass and the directions of rays to an object in front of a concave mirror at a distance greater than double focal length, knowing that its focal length is 0.025 m with determine the properties of the formed image.

18 Assiut Governorate

Answer the following questions :

Question 1

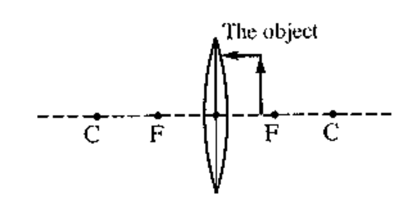
A Complete the following statements :

1. The crossing over phenomenon occurs in .... of first meiosis division.
2. The solar system consists of a number of .... planets revolve around the Sun.

3. The physical quantity that its magnitude and direction are necessary for identifying it is called ....
4. The combination of the male gamete and female gamete to form the zygote is known as ....
5. A concave mirror has a focal length of 20 cm , then the radius of curvature of its spherical surface equals ....
6. The space which contains all the galaxies, stars, planets, moons, living organisms and everything is called ....

B From the opposite figure :

Complete the figure to get an image for the object.
and mention its properties of the formed image ?



C What happens in the following cases ... ?

1. Increase the diameter of the eyeball from the normal state.
2. If the body cuts the same distance in half the time (to the speed of a body).

Question 2

A Correct the underlined words of the following :

1. The universe emerged from the particales of **oxygen** and hydrogen.
2. Form the properties of the image formed by the plane mirror is **real** , **inverted**, reversed and equal to the object.
3. The chromosome consists of two chromatids connected together **at the cytoplasm**.
4. **The irregular speed** is the value of displacement at a unit time and is a vector quantity.
5. Form speed measurement units are **meter / second^2** or kilometer/hour.
6. **The crossing star** is the largest star that can be seen from the surface of the Earth.

B What is meant by each of the following ... ?

1. Light reflection phenomenon.
2. A car moving at a uniform speed = 80 kms/hour.

C Mention one example for each of the following :

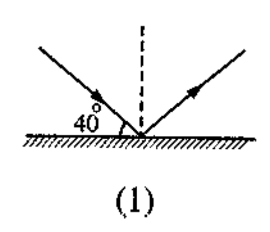
1. Scalar physical quantity.
2. An living organism reproduces by regeneration.

Question 3

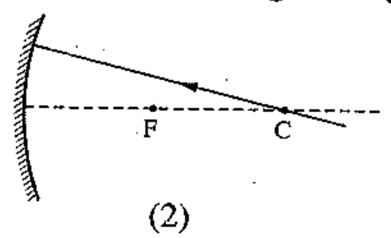
A Write the scientific term for each of the following :

1. The value of an object's speed relative to the observer.
2. A flat gaseous round disk that formed the solar system planets according to the perception of "laplace" scientist.
3. A cell division that occurs in the somatic cells and results in the growth of the living organism.
4. The actual length of the path that a moving object takes from the starting point of movement to the end point.
5. It is located in one of the spiral arms of the Milky Way on the edge of the galaxy.
6. A biological process where the living organism produces new individuals of the same kind and thus ensuring its continuity.

B Calculate the value of the angle of reflection in the following two figures :



(1)



(2)

C Compare between each of the following :

1. The positive acceleration and the negative acceleration according to (the concept of definition).
2. Real image and virtual image according to (the ability of receiving on a screen).

Question 4

A Choose the correct answer :

1. The founder of modern theory of the solar system is .... scientist.
   a. Moulten b. Chamberlain c. Fred Hoyle
2. The image formed by using a concave lens is ....
   a. real, enlarged, and inverted.
   b. virtual, smaller and inverted.
   c. virtual, smaller and upright.
3. At the end of this phase, the nucleolus and nuclear membrane disappear from the mitosis division ....
   a. prophase. b. metaphase. c. telophase.

4. If a light ray falls passing through the optical centre of the convex lens, it leaves the lens ....

   a. passing through the focus. b. parallel to the principal axis.

   c. without refraction.

5. The continuous expansion of the universe, is due to ....

   a. separation of galaxies. b. approaching of galaxies.

   c. equivalent to galaxies.

B Give reasons for each of the following :

1. A convex mirror is put at the left side and right of the driver of the car.
2. Occurrence of interphase before starting the mitosis cell division.

C A racer covered 50 meters northward within 30 seconds then 100 meters eastward within 60 seconds then 50 meters southward within 10 seconds, and then returns back to the start point within 40 seconds :

1. Calculate the total distance that the racer moved ?
2. What is the average speed of the racer ?
3. Calculate the displacement ?

19 Sohag Governorate

Answer the following questions :

Question 1

A Write a suitable word to complete the following statements :

1. The force is a .... physical quantity and the time is a .... physical quantity.
2. The solar system is located in one of the .... arms of .... on the edge of the galaxy.
3. Correcting long-sightedness by using .... lens and correcting short-sightedness by using .... lens.
4. Yeast fungus reproduces asexually by ...., while the amoeba reproduces asexually by ....

B A car moved from rest and its speed became 25 m/s in 10 seconds. Calculate its acceleration. With mention of its kind.

C What is meant by ... ?

1. The crossing over phenomenon. 2. The pole of the mirror. 3. Fertilization.

Question 2

A Correct the underlined words :

1. If the speed of a car is 72 km/h. means its speed is = **40** m/s.
2. In the Big Bang theory explains that the universe is formed by the cohesion of **Oxygen and Nitrogen** particles.
3. Chromosomes pairs arranged on the cell's equator in **anaphase 1.**
4. The (distance - time) graph for regular motion at uniform speed is represented by **curve line** passing through the origin point.

B Show by drawing the path of the light ray that forms the image of the object placed in front of a concave mirror at between the focus and the centre of curvature, What are the properties of the image being formed.

C What happens in the following cases ... ?

1. The incident light ray passing through the optical center of the convex lens.
2. The nebula gradually lost its heat in the theory of Laplace scientist.
3. When the bread mold fungus falls on a suitable environment.

Question 3

A Write the scientific term that correspond to each of the following :

1. Speed of the moving object relative to the observer which in resting or moving.
2. The solar system was a glowing gaseous sphere revolving around itself.
3. The line between the two centres of curvature of the lens passing by the optical centre of the lens.
4. Is the ability of animals to compensate their missing parts.
5. The phase which the cell prepares to division by the genetic material (DNA) duplicates.

B Give reasons for each the following :

1. No image is formed when the object is placed at the focus of a convex lens.
2. Mitosis is important for children, unlike the meiosis.
3. The perpendicular incident light ray on plane mirror reflects on itself.

C A racer covered 50 meters northward within 30 seconds, then 100 meters eastward within 60 seconds and then 50 meters southward within 10 seconds then stop. Calculate :

1. The average speed of the racer.
2. Velocity for racer.

Question 4

A Choose the correct answer :

1. The result of multiplying a speed of moving object by time ....
   a. acceleration. b. mass. c. distance. d. force.
2. .... began to form after 3000 million years after the Big Bang.
   a. galaxies. b. ancestral galaxies. c. the Sun. d. the Earth.
3. When the body covers equal distances in equal periods of time, the speed of the body is ....
   a. increases. b. decreases. c. irregular speed. d. uniform speed.
4. If the length of the radius of curvature of concave mirror 20 cm, then the focal length of the mirror equals ....
   a. 5 b. 10 c. 15 d. 20

B Compare between :

1. Nebular assumption and the modern theory (in terms of origin of the solar system).
2. Real image and virtual image (in terms of the possibility be formed on a screen).
3. Long-sighted person and short-sighted person (in terms of the place of the image formed).

C If the number of chromosomes in a human pancreas cell is 23 pairs, then what is the number of chromosomes in the following cells.

1. Skin cell. 2. Sperm. 3. Fertilized egg.

20 Qena Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. .... image can be received on a screen.
2. The stars move in a fixed orbit around the center of the ....
3. The measuring unit of acceleration is ....
4. Asexual reproduction takes place by .... in the yeast fungus.
5. We use .... lens to obtain a virtual and magnified image.

B What is meant by ... ?

1. The secondary axis of the mirror.
2. The crossing over phenomenon.
3. Nebula.

C Two cars move in straight line, the car (A) moves with speed 20 m/s, while the car (B) moves with speed 30 m/s. Calculate the distance covered by each car after one minute.

Question 2

A Choose the correct answer :

1. The Milky Way galaxy took its disc form after about .... million years after the Big Bang.
   a. 1000 b. 3000 c. 5000 d. 10000
2. From the examples of the vector physical quantities is ....
   a. time. b. force. c. mass. d. length.
3. The optical piece which forms an image that inverted and equal to the object is ....
   a. concave lens. b. concave mirror. c. convex mirror. d. plane mirror.
4. The nucleolus disappears during the mitosis cell division in ....
   a. prophase. b. metaphase. c. anaphase. d. telophase.
5. (Distance - time) graph for an object moves at regular speed is represented by a straight line ....
   a. parallel to time axis. b. parallel to distance axis.
   c. passing through the origin point. d. (a) and (c) together.

B What is meant by each of the following ... ?

1. The radius of curvature of the face of a concave lens = 20 cm.
2. A car moves of regular speed 80 km/h.

C Compare between :

1. The crossing star theory and the modern theory (according the name of the scientist).
2. Short-sightedness and long-sightedness (according to reasons of each).
3. Somatic cells and gametes (according to number of chromosomes).

Question 3

A Put (✓) or (×) in front of the following sentences :

1. The universe emerged from the particles of hydrogen and helium. ( )
2. The convex lens is thick at the center and less thick at the tips. ( )

3. The simplest type of motion is the motion in a curved path. ( )

4. A person moves 40 metres northward then returned 20 metres southward, so his displacement is 60 metres northward . ( )

5. Each group of stars is gathered in the solar system. ( )

6. A car covers 500 meters in 25 minutes, so its speed equals 20 m/sec. ( )

B What happen in the following cases ... ?

1. An object is put at the focus of a convex lens.
2. The starfish misses one of its arms and it contains a part of its central disk.

C Mention one use (or importance) for each :

1. Mitosis division.
2. The convex mirror is placed in the left side of the car driver.

Question 4

A Write the scientific term for each of the following sentences :

1. The combination of a male gamete and female gamete to form a zygote.
2. The speed of moving object relative to the observer.
3. The space which contains all the galaxies, stars, planets and living organisms.
4. The displacement covered through a unit time .
5. The point of connection of two chromatids of the chromosome together.

B Give reasons for :

1. The word ambulance is written in a converted (laterally inverted) way on the ambulance car.
2. The continuos expansion of space.
3. The moving cars cannot move inside crowded town all the time by uniform (regular) speed.

C An object is put at a distance of 10 cm from a concave mirror, its focal is 4 cm :

1. Draw a diagram to show the path of the rays falling on the mirror and the path of the rays that are reflected from it.
2. Mention the properties of the formed image.

21 Luxor Governorate

Answer the following questions :

Question 

A Choose the correct answer :

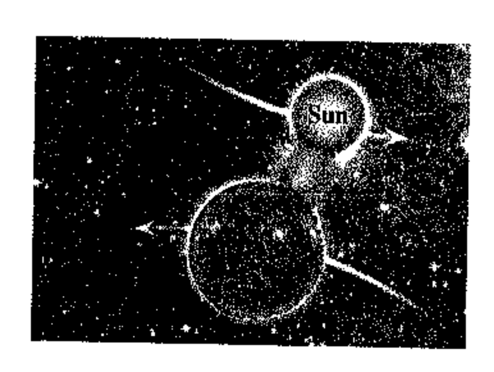
1. The source of genetic variation is the .... reproduction.
   a. budding   b. vegetative.   c. sexual.   d. regeneration.
2. A body of length 4 cm is placed at a distance of 8 cm from a convex mirror, so the length of the formed image becomes ....
   a. 16 cm.   b. 8 cm.   c. 4 cm.   d. less than 4 cm.
3. In case of motion that is described as movement at irregular speed, it is useful to refer to another term which is the .... speed.
   a. uniform.   b. scalar.   c. vector.   d. average.
4. If a person was putting a pen in his left pocket, then the formed image of the pen on a plane mirror will be on the .... side as it is ....
   a. left – reversed   b. right – upright   c. right – reversed   d. left – virtual

B What is meant by ... ?

1. The distance covered by an object is changed by 2 m each second.
2. The combination of male gamete with female gamete to form a zygote.
3. The focal length of a concave lens is 7 cm.

C In the opposite figure, mention :

1. The name of the theory.
2. The effect of the attraction force on the gaseous line that extends from the Sun ?
3. The number of the galaxies in the universe.



Question 2

A Complete the following sentences :

1. The straight distance covered by the object in a certain direction is called ....
2. The .... telescope is from the space telescopes.
3. The spindle fibers are formed during the cell division in ....
4. The double of the distance between the optical center of a lens and its focus = ...

B Give reasons for :

1. The continuous expansion of the universe.
2. The technic of discovering the cancer cells by using the Nano-molecules of gold depend on using special protein.
3. No image is formed when the object is put in the focus of a convex lens.

C An object moves with a uniform acceleration in a fixed direction, its speed reaches 3.6 km/h after 5 second, then after another 11 seconds, its speed reaches 1.3 m/s calculate :

1. The acceleration of the moving object.
2. The initial speed of this object (by km/h).

Question 3

A Write the scientific term for each of the following :

1. The straight line joining between the two centers of curvature of the lens.
2. A type of asexual reproduction that takes place in plants' vegetative organs without the need of seeds.
3. The result of multiplying half the speed of a body with double of the time.
4. A theory based on an astronomical phenomenon in which a star was glowing for a short time, and then its glowing disappears gradually.

B What happens when ... ?

1. The centrosome disappears from the animal cell.
2. An object is put at distance equal to the double of the focal length of a convex lens.
3. The nebula loses its heat in the assumption of Laplace.

C A moving car (A) in straight line measures the relative speed of a car (B) which was in the opposite direction, it found that the relative speed of the car (B) was 140 km/h and when the car (A) reduces its speed to the half, it found that the relative speed of the car (B) becomes 100 km/h, calculate the real speed of the two cars ?

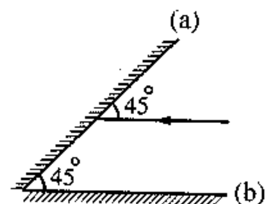
Question 4

A Correct the underlined words in the following :

1. When the object covers equal distance at equal periods of time, this means that the object move with **a negative** acceleration.
2. the solar system is located in one of the **circular** arms of the Milky Way galaxy.
3. When putting a body on a distance of 16 cm from a concave mirror its focal length is 12 cm, then the image formed will be **virtual upright** and magnified image.
4. Pilots take in consideration the **uniform speed** of the wind.

B From the opposite figure answer :

Complete the drawing and calculate the angle of incidence from the mirror (a) on the mirror (b) and mention the reason ?



C 1. Compare between : The long-sightedness and short-sightedness in the term of the reasons and the treatment ?

2. If the number of chromosomes in a pancreatic cell was 23 pair, so what is the number of chromosomes in :

(a) A skin cell. (b) A fertilized egg cell.



22 Aswan Governorate

Answer the following questions :

Question 1



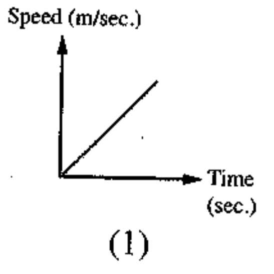
A Complete the following sentences :

1. .... is defined as the covered distance within a unit time.
2. The Sun and surrounding planets revolve around the centre of ....
3. Asexual reproduction in the bread mould happens by ....
4. The distance between the focus of the concave mirror and its pole is called ....

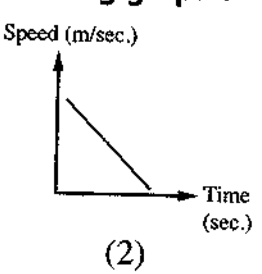
B What happens in the following ... ?

1. The parts of the inner chromatids are exchanged in the first prophase.
2. A light ray incident by an angle 45° on a plane mirror.

C Describe the motion of the body in each of the following graph :



(1)



(2)

Question 2

A Choose the correct answer :

1. The incident light ray passing through the focus of concave mirror ....
   a. refracts parallel to the principal axis.
   b. refracts passing through the center of curvature.
   c. reflects parallel to the principal axis.
   d. reflects passing through the center of curvature.

2. The parental individual disappears when the reproduction occurs in the ....

a. bacteria. b. yeast. c. bread mould. d. all the previous.

3. The concept of the body movement means ....

a. constancy of its position with the change in the time.

b. the change in its position with the time.

c. its speed. d. its acceleration.

4. The scientist who establish the modern theory of the solar system is ....

a. Chamberlain. b. Moulten. c. Fred Hoyle. d. Laplace.

B Give reasons for :

1. The distance is a scalar physical quantity while the displacement is a vector quantity.
2. Cellular division begins with interphase.

C What is meant by ... ?

1. Uniform speed.
2. The pole of the spherical mirror.

Question 3

A Write the scientific term :

1. The straight line joining the two centers of curvature of the lens.
2. The ability of some animals to compensate the missing parts by reproduction.
3. The speed of the moving object relative to the observer.
4. The gaseous round disk that formed the planets of the solar system.

B Compare between each of the following :

1. Long-sightedness and short-sightedness. (according to the position of the formed image)
2. Sexual reproduction and asexual reproduction. (according to the genetic traits of the resulted offspring)

C Draw a path of light rays that illustrate the formed image of object is placed at a distance more than double of the focal length in case of the convex lens, then mention the properties of the formed image.



A Correct the underlined words :

1. The solar system contains many <u>stars</u>.
2. <u>Euglena</u> reproduces asexually by budding.

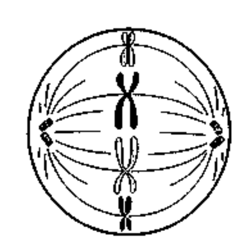
3. **The focus** is a point inside the lens, the principal axis passes by it.

4. Velocity = $\frac{\textbf{distance}}{\text{total time}}$

B **A racer covered 50 meters northward within 30 seconds then 100 meters eastward within 60 seconds then 50 meters southward within 20 seconds and then returns back to the start point within 40 seconds :**

1. Calculate the total distance that the racer moved ?
2. What is the average speed of the racer ?
3. What is the displacement ?

C **The opposite diagram represents a phase in mitotic division :**



1. What is the name of this phase ?
2. What is the changes happens in this phase ?

23 The New Valley Governorate

Answer the following questions :

Question 1

A **Choose the correct answer :**

1. When the object covers equal distances at unequal periods of time, it moves with a .... speed.
   a. uniform   b. negative   c. positive   d. non-uniform
2. The car (A) moves at 80 km/h and the car (B) moves at 40 km/h in the same direction. Therefore the speed of the car (A) relative to the observer in the car (B) equals .... km/h.
   a. 40   b. 80   c. 30   d. 120
3. The number of chromosomes in a gamete is .... the number of chromosomes in the original cell.
   a. equal to   b. a half of   c. a quarter of   d. a double of
4. Our solar system is located in one of the .... arms of the Milky Way galaxy.
   a. spiral   b. oval   c. straight   d. circular

B **What happens when ... ?**

1. Sporangia of bread mould fungus rupture.
2. The diameter of the eyeball elongates.
3. Initial speed of a moving object is more than the final speed (according to the acceleration of its movement).

C An object is placed at the distance of 15 centimeters from the spherical mirror with a diameter of 40 cm. Then an image which could be received on a screen is formed.

1. What is the type of the mirror ?
2. Determine the position and properties of the image formed by the mirror.

Question 2

A Complete the following sentences with the correct answer :

1. Laplace's theory assumed that nebula lost its heat, so its size .... and its revolving speed around .... increased.
2. The focal length of the convex lens equals the distance between .... and ....
3. The atomic particles merged together producing .... gas and .... gas which over millions of years produced galaxies, stars and the universe.
4. Distance is one of the .... physical quantities but force is one of the .... physical quantities.

B Mention the name of the scientist who used the way of the collection of the Sun rays against the Roman fleet and mention the name of the optical piece used.

C A car moves from rest and its speed reaches 25 m/sec in 10 seconds. Calculate the acceleration with which the car moved.

Question 3

A Write the scientific term for each of the following :

1. The group of galaxies which revolve together in the universe space due to gravity.
2. The length of the shortest straight line between the primary position of movement and the final position of movement.
3. A disease which infects the eye and causes vision defects because the eye lens becomes opaque.
4. The process of genes exchanging between the two inner chromatids of the tetrad.

B If you know that there are two types of cell division and one of them contains the following phases :

(Anaphase – Metaphase – Telophase – Prophase)

1. Arrange these phases according to the priority of occurrence.
2. What is the type of the division which contains these phases ?

C **Give reasons for each of the following :**

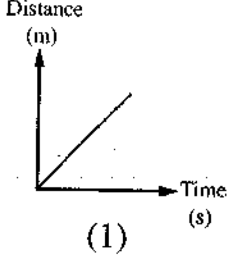
1. A convex mirror is placed on the right and on the left of a car driver.
2. It is impossible to obtain a real image by using a concave lens.
3. The genetic material duplicates in the interphase before entering into the mitosis division.

Question 4

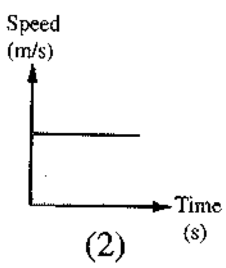
A **Rewrite the following sentences after correcting the underlined mistakes :**

1. **Gene** is a site in which the two homologous chromatids in the chromosome connect.
2. If the angle between the incident ray and the reflected ray from a plane mirror is 140°, the angle of incidence is **40°**.
3. **Pollination** is the combination of the female gamete and the male gamete to form a zygote.
4. If the uniform speed of a car is 72 kilometers/hour, this means that its speed is **18 meters/second**.

B **Describe the movement of an object which is represented by the following graphs :**



(1)



(2)

C **Mention the assumptions of the crossing star theory which clarify the evolution of the solar system.**

24 South Sinai Governorate

Answer the following questions :

Question 1

A **Choose the correct answer :**

1. Measuring unit of speed is ....
   a. meter.sec. b. meter/sec. c. meter/sec^2 d. meter.
2. The short-sighted person needs a medical eye glasses with .... lenses.
   a. convex b. concave c. plane d. convex and concave
3. Number of chromosomes in female gamete equal .... the number of chromosomes in the original cell.
   a. quarter b. half c. same d. double

4. When the object covers equal distances at unequal of periods of time, the speed is called ....

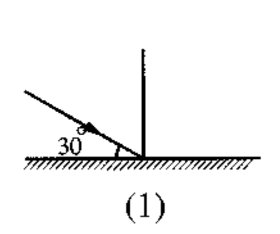
   a. uniform. b. negative. c. positive. d. non-uniform.

5. The filamentous fibers called a spindle fibers is composed in ....

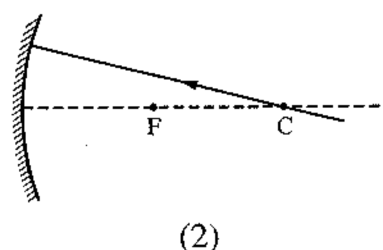
   a. telophase. b. interphase. c. prophase. d. metaphase.

B **A car starts moving from rest, the speed of the car increase to 25 m/sec after 10 second. Calculate the acceleration of this car.**

C **Calculate the angle of reflection in each of the following figures :**



(1)



(2)



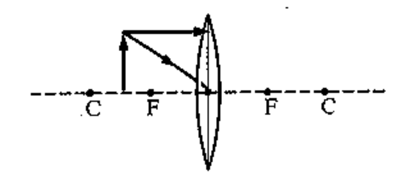
Question 2

A **Write the scientific term :**

1. The value of an object's speed relative to the observer.
2. Located in one of the spiral arms of the Milky Way galaxy.
3. Ability of animals to compensate their missing parts.
4. A cell division that occurs in the somatic cells and results in the growth of the living organism.
5. A phase in which some important vital processes occur to prepare the cell for division and the genetic material in the cell is doubled.

B **Complete the following drawing :**

Then mention the properties of formed image.



C **Mention one example for the following :**

1. Vector physical quantity.
2. Living organism reproduce by spores.



Question 3

A **Complete the following sentences :**

1. The radius of curvature of the convex mirror equals .... of its focal length.
2. The crossing over phenomenon occurs in the .... of .... division.

3. The physical quantities that has magnitude only to identify is ....
4. The modern theory of the world belongs to .... scientist.

B **Give reasons for the following :**

1. It is hard to measure regular speed practically.
2. The parent disappear during binary fission.

C **Mention one use for contact lenses.**

Question 4

A **Put (✓) or (×) in front of the following sentences :**

1. Each lens has one center of curvature. ( )
2. Meiosis division aims to the production of the gametes. ( )
3. Displacement is the value of change of an object's speed in one second. ( )
4. There are a concave mirror at the left of the car driver. ( )
5. The expansion of the universe and the merging of atomic particles creating oxygen and nitrogen. ( )

B **Complete the spaces in the table :**

Speed (m/s)	Distance (m)	Time (sec)
.... (1)	100	5
5	.... (2)	10
8	96	.... (3) ....

C **What happens when ... ?**

1. The nebula gradually lost its heat according to Laplace.
2. The male gamete combines with female gamete.

25 North Sinia Governorate

Answer the following questions :

Question 1

A **Complete the following statements :**

1. If a car covers a distance = 72 km within a time = 1 hour, the car's speed during this time is .... m/s.

2. Distance is considered as .... physical quantity and force is considered as .... physical quantity.
3. The vision defect which is due to a shortness in the radius of the ball is called ....
4. The solar system is located in one of the spiral arms of .... on the edge of the galaxy.
5. The chromosome chemically consists of nuclear acid called .... and ....
6. When the male gamete fuses with the female gamete, ... is formed.

B **Show by drawing only the formation of a virtual, upright and magnified image by using the spherical mirror.**



Question 2

A **Write the scientific term for each of the following :**

1. The speed of a moving body relative to the observer.
2. The total distance that a moving object covers divided by the total time taken to cover this distance.
3. A point inside the lens lies on the principal axis in the mid distance between its faces.
4. It contains all the galaxies, stars, planets and living organisms.
5. A phase in which some important vital processes occure to prepare the cell for division and the genetic material in the cell is doubled.

B **Mention the properties of the formed image by the concave lens.**

C **Compare between somatic cells and reproductive cells in accordance to :**

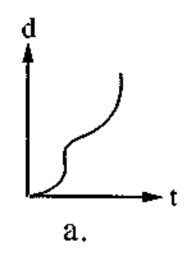
1. Number. of chromosomes. 2. No. of produced cell. 3. Type of division.



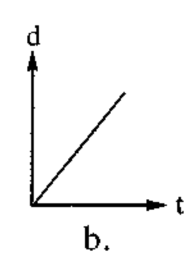
Question 3

A **Choose the correct answer :**

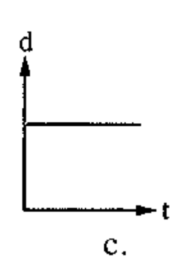
1. The concept of the body movement means : ....
   a. Constancy of its position with the change in the time. b. Its speed.
   c. The change in its position with the time. d. Its acceleration.
2. Which of the following graphs represents the movement of an object at constant speed ....



a.



b.



c.

3. The shortest distance covered by a body in certain direction is called ....
   a. the distance. b. the displacement. c. the acceleration. d. the speed.
4. A light ray that falls on a plane mirror as in the figure it reflected where the reflection angle equals ....
   a. 30° b. 60°
   c. 90° d. 180°

30°

5. The source of genetic variation is the .... reproduction.
   a. budding b. vegetative c. sexual d. asexual
6. If a person stands at 3 m from a plane mirror, so the distance between the person and his image is ....
   a. 3 m. b. 6 m. c. 9 m. d. 12 m.

B What is meant by each of the following ... ?

1. A moving car covers a distance of 100 kilometers in two hours.
2. The regeneration.

Question 4

A Give reasons for :

1. The mitosis division is important for children.
2. The velocity is a vector physical quantity.

B Show by drawing only the formation of the image equal to the object by means of a convex lens.

C A car moves with speed 80 m/s . If the driver used the brakes to decrease the speed, so it decreased by 2 m/s^2. Calculate its speed after 12 seconds from using the brakes ?

D What happens when ... ?

The nebula loses its temperature in Laplace's opinion.

26 Red Sea Governorate

Answer the following questions :

Question 1

A Complete the following statements :

1. Path of motion in one direction may be .... or .... or the two motion together.
2. The chromosome consists from .... connected at ....

3. The focal length for the convex lens equal to the distance between .... and ....
4. The force is consider .... physical quantity and the mass is .... physical quantity.
5. The fertilization process is the combination between .... and .... to form a zygote when it grows, it gives a new offspring.

B What happens when ... ?

1. A light ray pass in the optical centre of lens.
2. A cloud of gas remained and subject to cooling and contraction processes as modern theory.
3. Putting the yeast fungi in a warm sugar solution.

C What mean with each of the following ... ?

1. The nebula.
2. The distance which an object travels in the east direction equal 30 metre.

Question 2

A Write the scientific term for each of the following :

1. The point that is in the middle of the reflecting surface of the spherical mirror.
2. A network of filamentous fibers, extend between the two poles of the cell in the prophase.
3. A vision defects leads to formation of image behind the eye retina.
4. The result of multiplying a speed of a moving object by time.
5. It contains all galaxies, stars, planets and living organism.

B Write the function of :

1. Speedometers is in airplanes and cars.
2. DNA nuclear acid.

C An object moving in straight line, the table show the distances and times what is the object move.

Distance (m)	10	20	30	40	50
Time (sec.)	5	10	15	20	25

1. Draw the graph (distance - time).
2. Calculate the speed of moving object.

Question 3

A Give reason for each of the following :

1. Asexual reproduction produce new individuals identical to the parents.
2. The incident light ray perpendicular on reflecting surface reflect on itself.

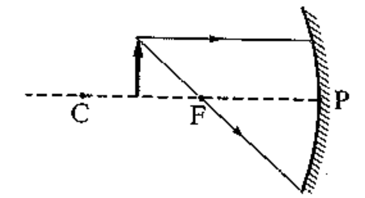


3. A moving car with speed seems constant to the observer in anther moving car in the same direction, and with the same speed.
4. The mitosis division very important for the children.

B **Correct the underlined words :**

1. The **crossing star** is a big star can seen from the Earth.
2. The **real** image cannot receive on the screen.
3. The meiotic division in the **somatic** cells.
4. The number of chromosome in plant stem equal **quarter** its number in the pollen grains for the same plant.

C **Transfer the drawing to your answer sheet, then answer :**

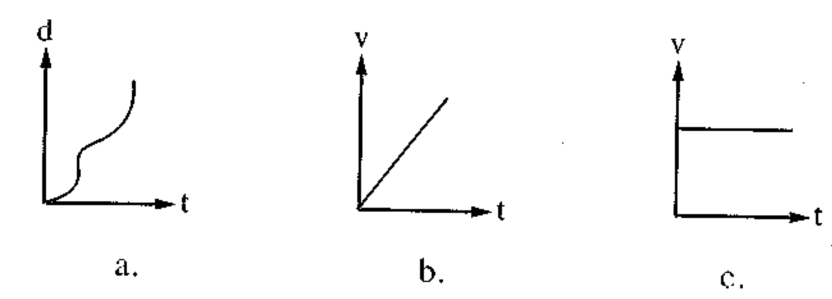


1. Complete the light rays to form the image of the object.
2. The properties of the formed image.

Question 4

A **Choose the correct answer :**

1. The .... found in one spiral arm of Milky Way galaxy.
   a. galaxy b. universe c. solar system
2. The reproduction by spores accur in this living organisms except ....
   a. amoeba. b. bread mould. c. mushroom.
3. A convex lens with focal length 5 cm, put a body at a distance more than the double of its focal length, the image formed is real, inverted and small at a distance .... cm.
   a. 5 b. 8 c. 10
4. The graph .... is the object move with acceleration equal zero.

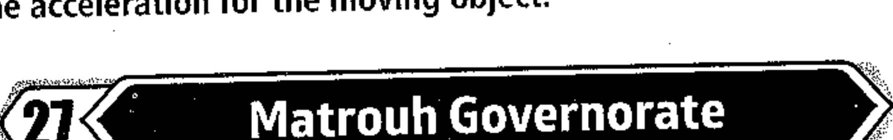


5. The light ray reflect in the same medium when meeting the reflecting surface this is ....
   a. reflection phenomenon. b. refraction phenomenon. c. (a) and (b) together.

B **This shape is a vital phenomenon.**

1. Write its name.
2. The name of the phase where this phenomenon accrue.
3. What is the important of this phenomenon.

C **The object start to move from rest and its speed become 15 m/s through 3 second. Calculate the acceleration for the moving object.**



Answer the following questions :

Question 1

A **Choose the correct answer :**

1. Bread mould fungus reproduces by ....
   a. budding. b. spore propagation. c. binary fission. d. regeneration.
2. A car covers 180 meters in two seconds, so its speed = ...
   a. 90 m/sec. b. 180 km/h. c. 25 km/h. d. 45 km/h.
3. The image of the body formed by plane mirror is always ....
   a. virtual – enlarged – erect. b. real – diminished – inverted.
   c. real – equal – inverted. d. virtual – equal – erect.
4. According to the Big Bang theory, within minutes from the origin of the universe, the ratio of hydrogen to helium is ....
   a. 75 : 1 b. 25 : 1 c. 3 : 1 d. 1 : 3

B **Compare between :**

1. Long-sightedness and short-sightedness. (The type of lens used in treatment)
2. Metaphase of mitosis and metaphase of meiosis (I). (With drawing).

C **A car moves at a speed of 60 m/sec. If the driver used the brakes to decrease the speed by 3 m/s^2, calculate the time after which the car stops.**

Question 2

A **Write the scientific term :**

1. The ability of some animals to compensate their missing parts.
2. The point inside the lens on the principle axis in the mid distance between its faces.

3. The rate of change of displacement.
4. The value of an object speed relative to the observer.
5. The point of collection of the refracted light rays which is produced when the light rays fall parallel to the principal axis of a lens.

B A concave mirror with a focal length of 6 cm. and an object is placed at a distance of 8 cm from the mirror, Determine the position of the formed image and its characteristic by drawing and direction of rays.

C What is meant by ... ?

1. Crossing over phenomenon.
2. Nebula.

Question 3

A Put (✓) or (×), Then correct the wrong one :

1. The spindle fibers are formed in the plant cell from the centrosome. ( )
2. A spherical mirror whose diameter is 12 cm its focus lies at a distance 6 cm from the pole. ( )
3. Somatic cells are divided by meiosis which lead to the growth of living organisms and compensation of damaged cells. ( )
4. According to modern theory the star exploded due to huge nuclear reactions. ( )
5. When an object moves at an acceleration equals zero this means that the object moves at a uniform speed. ( )

B Give reasons for :

1. Sexual reproduction is source of genetic variation.
2. The continuous expansion of universe.
3. Some persons have short-sightedness.

C When do following values equal zero :

1. An angle of incidence of light ray on a plane mirror.
2. The displacement of a moving object.

Question 4

A Complete the following statements :

1. According to modern theory the gaseous cloud subjected to .... and .... processes forming the matter of planets.
2. Asexual reproduction takes place by .... in yeast fungus and by .... in bacteria.

3. If a car moves at a speed of 70 km/h and it seems to an observer at a speed 120 km/h therefore the speed of the moving observer is .... km/h and in the .... direction.
4. The incident light ray passing through the centre of curvature of the mirror reflects with an angle = ...
5. Starfish reproduces asexually by ....

B What happens when ... ?

1. When the distance between a planet and the Sun increases.
2. The length of the eye radius is longer than normal.
3. The nebula loses its temperature according to Laplace's theory.

C Mention the importance of each of the following :

1. Gravity in solar system.
2. Light year.
3. The gaseous line in the crossing star theory.

Final Examinations 2018



1 Cairo Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The Sun and the surrounding planets revolve around the centre of .... galaxy.
2. Mitosis occurs in the .... cells of living organisms.
3. Distance is a .... physical quantity, while force is a .... physical quantity.
4. The scientist who established the modern theory about the evolution of the solar system is ....

B What is meant by each of the following ... ?

1. Angle of reflection.
2. Uniform acceleration.
3. The pole of a mirror.

C An object moves in a straight line northward at a speed of 5 m/sec. and its speed reaches 20 m/sec through 3 seconds.

Calculate the following :

1. The velocity after 3 seconds.
2. The acceleration of the moving object.

Question 2

A Choose the correct answer :

1. The crossing over phenomenon takes place at the end of ....
   a. prophase I. b. metaphase I. c. anaphase I. d. telophase I.
2. A body of length 4 cm is placed at a distance of 8 cm from a convex mirror, so the length of the formed image becomes ....
   a. 16 cm. b. 8 cm. c. 4 cm. d. less than 4 cm.
3. The ability of some animals to compensate their missing parts is called the ....
   a. budding. b. regeneration. c. sporogony. d. sexual reproduction.
4. The line between the centres of curvature of the lens passing by the optical centre of the lens is called the ....
   a. focal length. b. principal axis. c. secondary axis. d. radius of curvature.

5. The scientists believe that the universe emerged from a massive explosion and it is in ....
   a. continues contraction.
   b. contraction then expansion.
   c. expansion then contraction.
   d. continues expansion.

B Explain by drawing :

The properties of the image formed by a convex lens when an object is placed between the focus and double of the focal length.

C Give reasons for :

1. Displacement is a vector quantity.
2. The focal length of a concave mirror can be determined by knowing its radius of curvature.

Question 3

A Rewrite the following statements after correcting the underlined words :

1. When a moving car covers equal distances at equal periods of time, so it moves with a **relative** speed.
2. The solar system includes **nine** planets revolve around the Sun.
3. The chromosome consists of two chromatids connected at the **cytoplasm**.
4. Nebular theory suggested that the solar system originated from a glowing gaseous sphere revolving around **the Sun**.
5. The two gases which produced the galaxies, stars and universe over millions of years are helium and **nitrogen**.

B What would happen in the following cases ... ?

1. Absence of centrosome in the animal cell.
2. A light ray is incident passing through the optical centre of a convex lens.

C Two race cars, the first car moves at a speed of 80 km/h, while the second car moves at a speed of 120 km/h, in the same direction. Mention the following :

1. The relative speed of the first car relative to an observer standing on one side of the race road.
2. The relative speed of the second car relative to passenger in the first car.

Question 4

A Write the scientific term for the following :

1. The distance moved through a unit time.
2. The combination of the male gamete and female gamete to form a zygote.
3. The space which contains all the galaxies, stars, planets and living organisms.



4. The regular speed by which the object moves to cover equal distances at the same period of time.
5. An optical piece is thin at its centre and more thick at the tips and diverging light rays falling on it.
6. Asexual reproduction takes place in some plants without needing seeds but through their vegetative organs.

B Compare between the following :

1. Short-sightedness and long-sightedness (concerning : the correction of both).
2. Positive acceleration and negative acceleration (concerning : the definition).



2 Giza Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The distance that a moving object covers within a unit time is known as ....
2. The incident light ray which is parallel to the principal axis of a concave mirror reflects passing through ....
3. The founder of the modern theory is the scientist ....
4. The scientists believe that the matter of the universe was a .... ball of high pressure and high temperature.

B What is meant by ... ?

1. Displacement of an object equals 50 metre eastward.
2. The distance between the principal focus of a spherical mirror and its pole = 20 cm.

C Compare between : Lenses and mirrors (concerning : the definition).

Question 2

A Choose the right answer :

1. If the speed of a car is 72 km/hour, this means that its speed equals .... m/s.
   a. 18 b. 20 c. 40
2. If an object is placed at a distance less than the focal length of a concave mirror, a virtual upright .... image is formed.
   a. diminished b. equal c. magnified

3. The ability of some living organisms (animals) to compensate their missing parts is known as ....

   a. budding. b. regeneration. c. sporogony.

4. The spindle filaments appear during cell division in ....

   a. telophase. b. interphase. c. prophase.

B Define each of the following :

1. The scalar physical quantity.
2. The crossing over phenomenon.

C A car moved from rest and its speed became 25 m/s. during 10 seconds. Calculate its acceleration.

Question 3

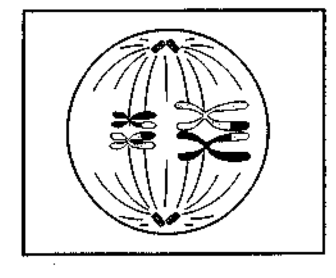
A Write the scientific term for each of the following :

1. The distance that a moving object covers divided by the total time taken to cover this distance.
2. The angle between the reflected light ray and the normal line at the point of incidence on the reflecting surface.
3. A group of stars that rotate together in cosmic space by the effect of gravity.
4. The point of connection of the two chromatids of the chromosome during the cell division.

B Give reasons for :

1. The continuous expansion of space.
2. The image formed by the convex mirror can't be received on a screen.

C The opposite figure represents one of meiotic division (meiosis) phases :



1. What is the name of this phase ?
2. Draw the phase next to this phase.



Question 4

A Correct the underlined parts in the following :

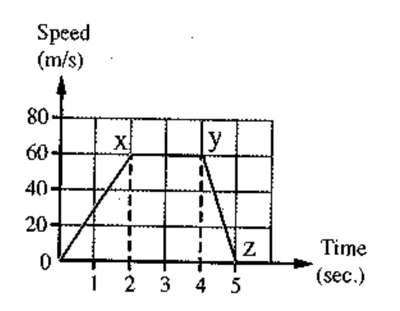
1. The relative speed of a moving car to an observer at rest is **less than** the real speed.
2. If the angle between the reflected light ray and the reflecting surface is 40°, the angle of incidence equals **40°**.
3. The theory that explains the origin of the universe is **nebular theory**.
4. Reproduction by spore propagation occurs in **paramecium**.



B **What are the results of ... ?**

1. Less convexity of the eye lens surfaces.
2. Approaching of a huge star to the Sun according to the crossing star theory.

C **From the opposite graph which represents the motion of a car :**



1. The value of the maximum speed of the car equals .... m/s.
2. The kind of acceleration in part (yz) is ....

3 Alexandria Governorate

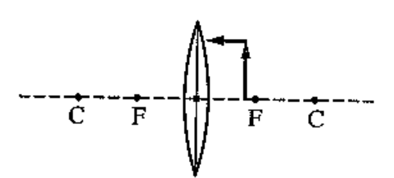
Answer the following questions :

Question 1

A **Complete the following sentences :**

1. The atomic particles fused and formed .... gas and .... gas, which formed the galaxies, stars, and universe.
2. The long-sighted person needs glasses of .... lens.
3. Vegetative reproduction in plants happens by .... division.
4. Vector velocity $= \frac{..........}{\text{Total time}}$.

B **Copy the opposite figure to your answer sheet, then complete the rays to get an image for the body and mention its properties.**



C **For a moving body when can we describe it as follow ... ?**

1. Moves by the simplest type of movement.
2. Moves by irregular speed.

Question 2

A **Write the scientific term :**

1. Fusion of the male gamete and the female gamete to form the zygote.
2. The speed of an object relative to an observer.
3. The force that controls the orbits of the planets around the Sun according to the modern theory.

B Give reasons for :

1. The formed image by the convex mirror is always virtual.
2. Occurrence of interphase before starting the cell division.

C Mention only the tools that are used in the determination of the radius of curvature of a concave mirror, then illustrate the relation between the radius of curvature and the focal length.

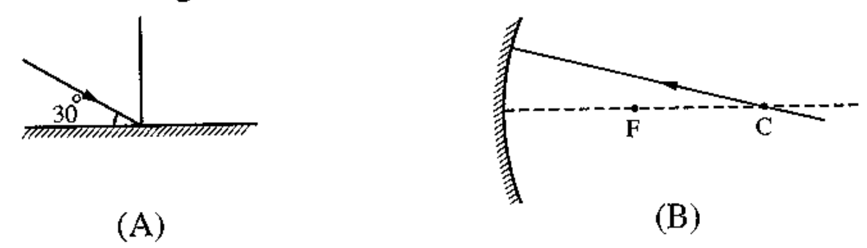
Question 3

A Rewrite the following statements after correcting the underlined parts :

1. Meiosis happens in the **somatic cells**.
2. The formed image by the plane mirror is **real and inverted**.
3. Nebular theory suggested that the origin of the solar system was a flaming **solid mass** rotates around itself.

B In the following two figures :

What is the value of the angle of reflection of the incident rays in figures (A) and (B)?



C What is the importance of crossing over phenomenon in the sexual reproduction ?

Question 4

A Choose the right answer :

1. The image of the object that lies at the centre of curvature of a concave mirror is ....
   a. real, inverted and enlarged. b. real, upright and equal to the object.
   c. real, inverted and equal to the object. d. virtual, upright and equal to the object.
2. If the chromosomal number in the male gamete of an organism is 20 so, the chromosomal number in the liver cell equals ....
   a. 5 chromosomes. b. 10 chromosomes. c. 20 chromosomes. d. 40 chromosomes.
3. .... established the crossing star theory.
   a. Laplace b. Fred Hoyle c. Hubble d. Chamberlain
4. The centromere of each chromosome divides longitudinally and the spindle fibers contract in mitosis during ....
   a. prophase. b. metaphase. c. anaphase. d. telophase.



B **Mention one example for each of the following :**

1. Scalar physical quantity.
2. An organism reproduces by spores.

C **A bike started movement from rest and its speed reached 5 m/sec. in 2.5 second, at the same time the speed of a car changed from 20 m/sec. to 45 m/sec., calculate the acceleration of each of them, then mention the type of acceleration in each of them.**



4 El-Kalyoubia Governorate

Answer the following questions :

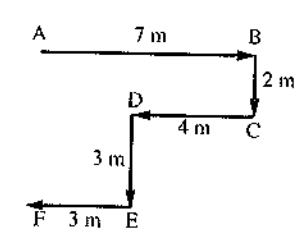


Question 1

A **Write the scientific term of the following sentences :**

1. Specialized cells which produce gametes.
2. Changing the position of an object as the time passes according to a fixed point.
3. A point inside the lens that lies on the principal axis at mid distance between the faces of the lens.
4. Something that includes all galaxies, stars, planets and living organisms.
5. The speed of a moving body relative to a moving or a static observer.

B **A body moves in the path (ABCDEF) as in the opposite figure. Calculate :**



1. The distance that the body moved.
2. The displacement of the body.

C **Give reasons for :**

1. The force is a vector quantity.
2. When the object is placed at the focus of a convex lens, the image is not formed.
3. There are no new races of grapes, when they reproduce by vegetative reproduction.



Question 2

A **Choose the correct answer :**

1. The number of chromosomes in the gamete is .... the number of chromosomes in the original cell.

   a. equal to b. half c. quarter d. double

2. When the body covers equal distances at unequal periods of time, the speed will be ....
   a. regular. b. decelerated. c. accelerated. d. irregular.
3. If the distance between the two centres of curvature of the lens is 20 cm. , this means that the focal length is ....
   a. 5 cm. b. 10 cm. c. 15 cm. d. 20 cm.
4. All the following cells contain full copy of genetic material except ....
   a. spore. b. bud. c. zygote. d. pollen grain.
5. The point at the middle of the reflecting surface of a spherical mirror is called ....
   a. focus of mirror. b. pole of mirror.
   c. centre of curvature of mirror. d. face of curvature of mirror.

B A student takes a time of 15 minutes to reach his school when he moves at an average speed (2 m/s). Calculate the total distance covered by the student when goes to school and returns back again to his starting point.

C The opposite figure shows a vital phenomenon :

1. What is the name of this phenomenon ?
2. Mention the name of the phase in which this phenomenon occurs and mention the type of its division.
3. What is the importance of its occurrence ?

Question 3

A Put (✓) or (×) in front of the following sentences :

1. Attraction force of the Sun that controls the orbit of the planets around it is one of Laplace's assumptions. ( )
2. When the light ray falls by an angle of zero on the reflecting surface, so the reflected light ray will be perpendicular on the reflecting surface. ( )
3. When the body moves at a constant speed, so the acceleration will be regular. ( )
4. In the Big Bang theory, the universe is formed from gathering of oxygen and hydrogen particles. ( )
5. Asexual reproduction keeps the genetic structure of living organisms. ( )

B Write the assumptions of crossing star theory for the origin of the solar system (4 assumptions only).

C Determine the position of an object in front of a concave mirror if the formed image is :

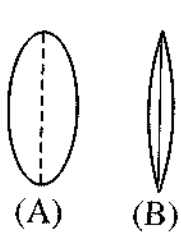
1. Real, inverted and magnified.
2. Virtual, erect and magnified.
3. Real, inverted and minimized.

Question 4

A What happens ... ?

1. When an injured liver or cutting a part of it.
2. To the displacement of a moving body when it returns back to its starting point.
3. To the speed of a body if it covers the same distance in half the time.
4. When rupturing sporangium in bread mould fungus.
5. To the distance between the image and the plane mirror when the body becomes closer to the mirror.

B In the opposite figure, two eye lenses for two eyes equal in eye diameter for two different persons. Which of them has short-sightedness and why ?



C Compare between :

1. Principal axis of spherical mirror and lens (according to : the definition).
2. Positive acceleration and negative acceleration (according to : initial speed and final speed).
3. Crossing star theory and modern theory (according to : the founder).

5 El-Sharkia Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. .... scientist who founder the nebular theory.
2. The spindle fibers are formed during the cell division in ....
3. .... are formed of groups of stars in the universe.
4. If a beam of parallel rays fall on the concave lens, and they parallel to the principal axis, so the rays pass through the concave lens .... as if they come from a point .... the lens.

B Define each of the following :

1. The optical centre of the lens.
2. The binary fission.
3. Contact lens.

C Represent the relation (speed - time) graphically :

If the car starts to move from rest (speed = zero) and after 1 second, its speed becomes 2 m/s, after another second, its speed increases to 5 m/s, then the driver had to use the brakes to slow down the car speed to 1 m/s, in the third second, and he stops completely after another second.

Question 2

A Choose the correct answer :

1. The uniform acceleration means that the object speed .... by equal values through equal periods of time.
   a. increases only b. decreases only
   c. increases or decreases d. doesn't change
2. From the scalar physical quantities is the ....
   a. acceleration. b. time. c. velocity. d. displacement.
3. The object moves at a constant (uniform) speed when ....
   a. it moves at a constant acceleration. b. it covers equal distances at unequal times.
   c. it covers equal distances at equal times. d. no correct answer.
4. A concave mirror with a focal length of 20 cm, and the object is placed at a distance of 50 cm from the mirror, the image is formed at a distance ....
   a. more than 40 cm. b. more than 20 cm and less than 40 cm.
   c. equals 20 cm. d. equals 60 cm.
5. The centromere of each chromosome is divided longitudinally, then the two chromatids are separated from each other in the ....
   a. prophase. b. metaphase. c. anaphase. d. telophase.

B Give reasons for :

1. The object that is placed at the focus of a convex lens has not an image.
2. The nebula lost its sphere form and became in a form of a flat rotating disk.
3. Sexual reproduction is a source of genetic variation.

C Compare with drawing only between :

The image which is formed when the object is placed at a distance less than the focal length of both of : Concave mirror and Convex lens.

Question 3

A Rewrite the following statements after correcting the underlined words :

1. The **incident light ray** is the light ray that bounces from the reflecting surface.
2. The Sun takes about **100 million years** to complete one rotation around the centre of the galaxy.
3. If the speedometer points to 72, this is equivalent to **15 m/s.**
4. In **convex** mirror, the image is inverted and equal to the object.
5. Many scientists believe that the universe emerged from a massive explosion **500 thousand years** ago.

B What happens if ... ?

1. Reproductive cells are divided by meiosis.
2. The initial speed of a moving body is greater than the final speed.
3. The combination of the male gamete and female gamete.

C If an object started its movement from point (A) and covered a distance 30 metres northward within 30 seconds, then 60 metres eastward within 20 seconds, and then 30 metres southward within 10 seconds. Calculate :

1. The total distance.
2. Average velocity, then mention its direction.

Question 4

A Write the scientific term for each of the following :

1. The speed of a moving object relative to a constant or a moving observer.
2. The rebounding of the light to the same side when it strikes a reflecting surface.
3. It is located in one of the spiral arms of the Milky Way galaxy on the edge of the galaxy.
4. A medical case as a result of the formation of the image behind the retina.
5. The space which contains all the galaxies, stars, planets, moons, living organisms and everything.

B 1. **What is meant by :** The focal length of a concave mirror = 10 cm.

2. **Mention the second law of light reflection.**
3. **What are the results based on :** The merge of the atomic particles together within minutes of the Big Bang.

C Compare with drawing only between :

Metaphase in first meiotic division and second meiotic division.

1 Cairo Governorate



(A) 1. real 2. prophase

3. galaxy

4. centromere – chromatid

(B) 1. It is the phenomenon of the light bouncing of (returning back) in the same medium, when it strikes a reflecting surface.

2. It is the total distance covered by the moving object divided by the total time taken to cover this distance.

3. It is a biological process, where the living organism produces new individuals of the same kind and thus, ensuring its continuity.

(C) $V_1 = 0$ $V_2 = 36$ m/sec t = 9 sec.

$\because a = \frac{V_2 - V_1}{t}$

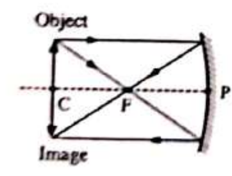
$\therefore a = \frac{36 - 0}{9} = 4$ m/sec^2 (positive acceleration)

2

(A) 1. d 2. c 3. d 4. d 5. a

(B) 1. Scalar 2. Vector

(C)



The properties of the image : real, inverted and equal to the object.



(A) 1. regular speed 2. eight

3. double 4. Laplace

5. concave lens. 6. Velocity

(B) 1. The zygote will be formed.

2. It will refract parallel to the principal axis.

(C) 1. Because the image of near objects, is formed behind the retina.

2. Because that, the focal length equals half the radius of curvature.

$F = \frac{1}{2} r$

4

(A) 1. Displacement. 2. Acceleration.

3. Reflecting angle. 4. Regeneration.

5. Scalar physical quantity. 6. Motion.

(B) 1. **Acceleration** : is the increasing of the object speed as the time passes.

Deceleration : is the decreasing of the object speed as the time passes.

2. **Somatic cells** : Mitotic cell division.

Reproductive cells : Meiotic cell division

2 Giza Governorate



(A) 1. b 2. d 3. a 4. c

(B) 1. $\overline{V} = \frac{50}{5} = 10$ m/sec. 2. $\overline{V} = \frac{50}{20} = 2.5$ m/sec.

(C) (1) 50° (2) zero°

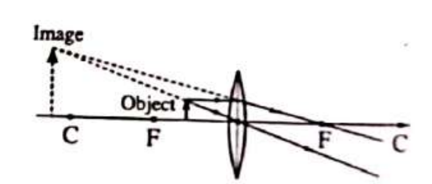
2

(A) 1. negative 2. 20 cm

3. light year 4. mitosis

(B) 1. Convex lens.

2.



(C) 1. Fertilization process occurs.

2. Body moves with zero acceleration.

3

(A) 1. Displacement. 2. Focal length.

3. Crossing over phenomenon.

4. Univerce.

(B) 1.

Speed	Velocity
Distance covered through a unit time.	Displacement covered through a unit time.

2.

Amoeba	Yeast fungus
Binary Fission	Budding.

(C) 1. Metaphase. 2. Interphase.

4

(A) 1. magnitude and direction.

2. refract 3. Nebular

4. haploid

(B) 1. Because it covers unequal distances at unequal periods of time.

2. Because the new individual gets the genetic traits from two sources (male and female gametes), and the crossing over phenomenon occurs during gametes formation.

(C) 1. Both car and the observer move with the same speed and direction.

2. The produced gamete contains half the number of chromosomes in the reproductive cell.



3 Alex. Governorate



(A) 1. distance - a scalar 2. plane

3. mitosis

(B) $\overline{V} = \frac{240 + 240}{16 + 120} = \frac{480}{136} = 3.5$ m/sec.

(C) 1. The space which contains the galaxies, stars, planets, moons and all living organisms.

2. The ability of the missing part in some living organisms to grow forming a complete organism identical to the parent individual.

2

(A) 1. b 2. d 3. a 4. d 5. d

(B) 1. Answer by yourself.

2. Because the produced individual has the same number of chromosomes of the parental individual.

(C) metre or kilometre.



(A) 1. Relative speed. 2. Convex mirror.

3. Galaxy. 4. Sporangia.

(B) 1. When it passes through its optical centre.

2. When the speed decreases by equal values in equal periods of time.

(C) 1. In placing an object at the centre of curvature of a concave mirror.

2. (a) Crossing over phenomenon.

(b) At the end of prophase I.

4

(A) 1. AB and CD

2. $a = \frac{V_2 - V_1}{t} = \frac{20 - 20}{10} =$ zero

(B)

	Short- sightedness	Long- sightedness
The radius of the eyeball	increased	decreased
The type of the lens	concave	convex

(C) 1. Controls the planets revolving around it.

2. Carry the genetic information of the living organism.

3. Forming the pollen grains in the flowering plants.

4 Kalyoubia Governorate



(A) 1. a 2. d 3. a 4. a 5. d

(B) 1. Huge amounts of gaseous materials resulted due to this explosion, which cooled forming the planets.

2. The animal will compensate its missing arm through regeneration, and the missing arm will form a new individual through reproduction by regeneration.

3. No image is formed.

(C) 1. Crossing over phenomenon.

2. At the end of prophase I.

3. Meiosis.

4. There is no genetic variation in the individuals of the same kind.

2

(A) 1. Vegetative reproduction.

2. Distance. 3. Galaxies.

4. Chromosomes. 5. Concave lens.

(B) $\because a = \frac{V_2 - V_1}{t}$

$\therefore V_2 = V_1 + a\,t$

$= 10 + (5 \times 5) = 35$ m/sec.

$\because$ The two cars are opposite in direction.

$\therefore$ Relative speed $= 30 + 35 = 65$ m/sec.

(C) 1. When the body moves in a certain direction and in a straight line.

2. When it falls passing through the centre of curvature.



(A) 1. 60° 2. 1m/sec. 3. budding

4. 2r 5. increases to the double

(B) (1) zero. (2) 25 m/sec.

(3) zero. (4) -5 m/sec^2.

(5) The car moves with positive acceleration.

(6) The car moves with zero acceleration.

(C) 1.

Regular speed	Irregular speed
The body covers equal distances in equal periods of time.	The body covers unequal distances in equal periods of time.

2.

Virtual image of the concave lens	Virtual image of the convex lens
Diminished	Magnified



(A) 1. Because the wind direction detects the time of the trip and also the amount of the fuel consumed, due to it affects the speed of the plane.

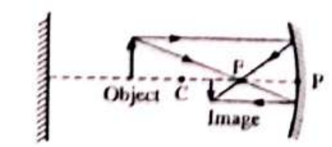
2. Because mitotic division leads to growth which is important for child's body.

3. Due to the continous movement of galaxies away from each others.

4. Because of the plane mirror forms a laterally inverted image.

5. Because it developed throught one parental individual.

(B) 1.



2. The properties of the formed image : real - inverted - diminished

(C) 1. Prophase. 2. Anaphase.

5 Menofia Governorate

1

(A) 1. Virtual image.

2. Principal axis of the mirror.

3. Interphase. 4. Convex lens.

5. Asexual reproduction.

(B) 1. Because ΔV = zero, whereas acceleration is the rate of change of velocity so it also equals zero.

2. Because the newly formed individual takes the genetic material from male and female, and also due to the occurance of crossing over phenomenon during gametes formation.

3. Because gametes are produced from meiosis, which is a reduction division.

(C) 1. $V = \frac{300}{50} = 6$ m/sec.

2. $V = \frac{300 + 300}{10 + 50} = \frac{600}{60} = 10$ m/sec.



(A) 1. The focal length = 10 cm.

2. The displacement = 100 m.

(B) The animal will compensate its missing arm through regeneration, and the missing arm will form a new individual through reproduction by regeneration.

(C) 1.

Acceleration	Mass
Vector	Scalar.

2.

Bread mold fungus	Sponge
Sporogony.	Budding.

3.

Big Bang theory	Nebular theory
Explain the origin of the universe.	Explain the origin of the solar system.

4.

A train	A car
V = 20 m/sec.	V = 30 m/sec.

5.

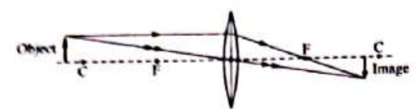
Mitotic division	Meiotic division
Somatic cells.	Reproductive cells.

(D) 1. ∵ The formed image is equal to the object.

∴ The object placed at the centre of curvature.

$F = \frac{1}{2} r = \frac{1}{2} \times 10 = 5$ cm.

2.





(A) 1. During anaphase the spindle fibers begin to shrink and two identical groups of chromosomes are formed at the two poles of the cell.

2. It contains the nucleic acid (DNA) that carries the genetic traits of the living organism.

(B) 1. Concave lens. 2. Concave mirror.

(C) 1. Chamberlain and Moulton.

2. liver transplantation.

3. Crossing over.

4. Solar telescope.

(D) 1. Distance = 12 + 8 = 20 m.

2. Displacement = 12 – 8 = 4 m (west).



(A) 1. a 2. d 3. a 4. b 5. d

(B) First :

1. 20 2. zero 3. 5

Second :

1. 15 2. 25

6 Dakahlia Governorate



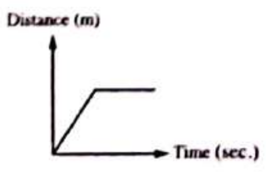
(A) 1. decreases - slower

2. outer - inner

3. centrosome - cytoplasm condensation

4. Vegetative - seeds

(B) 1.



2. (a) Gametes formation.

(b) Fertilization.

(C) 1, 2. Answer by yourself.

(D) 1. Total distance = 10 + 10 = 20 m.

2. Displacement = zero.

3. $V = \frac{10}{5} = 2$ m/sec.

2

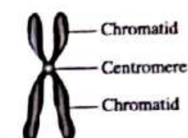
(A) 1. 1.8 2. Big Bang

3. The position 4. on it self

5. The pole 6. is equal to

(B) 1. Convex lens. 2. F = 6 cm.

(C) 1. The chromosome consists of two chromatids, connected at the centromere.



2. (1) It is the exchange of parts of genetic materials of the two inner chromatids of the tetrad.

(2) It is a very thin lens made of plastic, and can stick to the eye cornea by the eye fluid.

(D) 1. Mushroom fungus reproduce asexually by sporogony.

2. Yeast fungus reproduce asexually by budding.

3

(A) 1. Speed. 2. Galaxy.

3. Vritual image. 4. Microscope.

(B) 1. Because it depends on one parental individual, and occurs through mitosis.

2. Because it collects the ray in one point, which is focus.

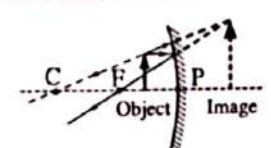
3. Because it is a diverging lens.

4. Because there is an inversely relation between speed and time at constant distance.

(C)

	Somatic cell	Reproductive cell
a. Type of division	mitosis	meiosis
b. Number of cells	2	4

(D)





(A) 1. a 2. c 3. c 4. d

(B) $V_1 = 90 \times \frac{5}{18} = 25$ m/sec.

$a = \frac{V_2 - V_1}{t} = \frac{0 - 25}{10} = -2.5$ m/sec^2. (decelerating motion)

(C) 1. In interphase the cell prepared for division by :
- Occurrence of some important biological processes.
- Duplicating the amount of genetic material (DNA).

2. It forms an erect minimized image for the road behind the car.

(D) 1, 2. Answer by yourself.



Sharkia Governorate



(A) 1. Acceleration. 2. Convex mirror
3. Milky Way galaxy. 4. Centromere.
5. Vegetative reproduction.

(B) 1. Virtual, erect and magnified image.
2. No image is formed.

(C) 1. Interphase.
2. Before the cell division.
3. - Occurance of some important biological processes.
- Duplicating the amount of the genetic material (DNA).



(A) 1. vector - scalar 2. Lenses - binoculars
3. the decrease - near
4. universe - solar system
5. mitosis - meiosis

(B) 1. zero
2. $V_1 = \frac{80}{4} = 20$ m/sec

$a = \frac{V_2 - V_1}{t} = \frac{0 - 20}{4} = -5$ m/sec^2

(C) 1. Anaphase. 2. Prophase.
3. Telophase.



(A) 1. c 2. a 3. b 4. d 5. a

(B) 1. It is the shortest straight line between two position.
2. It is from the start point to the end point.

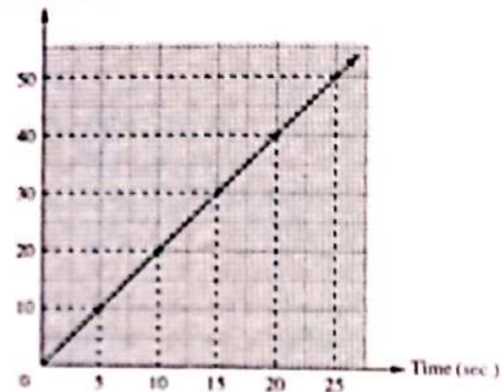
(C) 1. 50 km/h. 2. 20 km/h.
3. The relative speed depends on the observer condition.



(A) 1. Because it moves in a straight line or curved line or combination of both.
2. Due to light reflection.
3. To see the very small parts of the watch.
4. Due to the gravity of the Sun.
5. Because it helps in growth, and compensates the damaged cells.

(B) Answer by yourself.

(C) 1.



2. $V = \frac{10}{5} = 2$ m/sec.

8 Gharbia Governorate



(A) 1. Speed. 2. Fred Hoyle
3. somatic 4. scalar
5. real.

(B) 1. They are the arrangement of homologous pairs of chromosomes, where each pair consists of 4 chromatids.
2. Focal length = 20 cm.
3. Amount of displacement = 5 cm.

(C) $V_1 = 40$ m/sec $V_2 = 0$ $a = -2$ m/sec^2

$t = \frac{V_2 - V_1}{a}$

$= \frac{0 - 40}{-2} = 20$ sec.



(A) 1. b 2. a 3. c 4. d 5. d

(B) 1. It reproduces by budding forming a new bud, that remain connected to the parent cell forming a colony or separated from the parent cell and becomes as a new fungus.
2. It will reflected on itself.

3. The light energy transformed into heat energy, that burns and kill the cancer cells only.

(C) 1. It forms the spindle fibers, which play an important role during the cell division.

2. It forms a virtual, erect and smaller image to the way behind the driver.



(A) 1. binary Fission. 2. speedometer.

3. cornea. 4. nuclear.

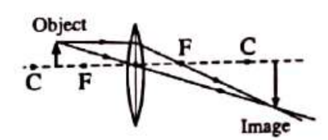
5. Distance.

(B) 1. For preparing the cell for division, by occurance of some biological processes and duplicating the genetic material (DNA).

2. Because it affects the speed of the plane, and so the time of arrival also the amount of fuel consumed.

3. Because the relative speed in this case equals the difference between the two equal speed, equals zero.

(C) 1.



2. Image properties : real, inverted and magnified.

4

(A) 1. Centromere. 2. Motion.

3. Universe. 4. Optical centre.

5. Acceleration.

(B) 1.

Pollen grains	Sperms
Anther of flowering plants.	Testes of human and animals.

2.

Average speed	Irregular speed
It is the total distances covered divided by the total periods of time.	It is the speed by which the object moves to cover unequal distances at equal periods of time.

3.

Short - sightedness	Long - sightedness
concave lens	Convex lens

(C) Equals (2 N), because reproduction by regeneration is a type of mitosis.

9 Damietta Governorate



(A) 1. vector - scalar 2. 8

3. DNA - protein 4. 20

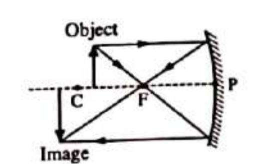
5. Spiral - Milky Way

6. sporogony - budding

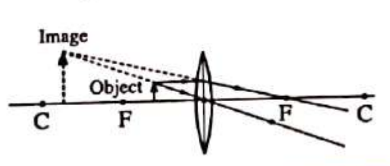
(B)

Female liver cell	Female ovarian cell
1. Mitosis.	1. Meiosis.
2. 2 cells.	2. 4 cells.
3. 2 N	3. N

(C) 1.



2.





(A) 1. Relative speed.

2. Continous expansion of the universe.

3. Crossing over phenomenon.

4. Spindle Fibers.

(B) 1. Because it is important for growth.

2. Because the refracted light rays are parallel.

3. Because its speed changed by time.

(C) Figure (1)

1. AB 2. BC

Figure (2)

1. Anaphase 1 2. Meiosis

3. Gametes formation

3

(A) 1. c 2. a 3. b 4. b 5. d

(B) 1, 2. answer by yourself.

(C) $t = \frac{d}{v}$

$= \frac{500}{100} = 5\ h$

Time of arrival = 7 + 5 = 12 AM

4

(A) 1. metaphase 2. binary fission
3. 2 4. speed is regular.
5. without refraction

(B) 1. Distance = 10 + 10 + 10 + 10 = 40 cm
2. Image properties : real, inverted and equal to the object.

(C) 1. No spindle fibers will be formed.
2. The size of nebula decreases, and its revolving around its axis increases.
3. The animal will compensate its missing arm through regeneration, and the missing arm will form a new individual through reproduction by regeneration.



Kafr El-Sheikh Governorate



(A) 1. gametes formation - fertilization.
2. Milky Way 3. m/sec.
4. The pole of the mirror.
5. prophase.

(B) 1. equal 2. 8
3. 500 4. plane



(A) 1. Chromatids. 2. Principal axis.
3. Velocity. 4. Light reflection.
5. Regeneration. 6. cataract.

(B) 1.

Asexual reproduction	Sexual reproduction
Through one living organism (parental individual).	Through two living organisms (male and female).

2.

Scalar physical quantities	Vector physical quantities
It identified by knowing its magnitude only, like mass.	It identified by knowing its magnitude and direction, like velocity.



(A) 1, 2. answer by yourself.

(B) 1. Total distance = 500 + 1000 + 500 = 2000 m.
2. Total time = 40 + 100 + 60 = 200 sec.
3. Displacement = 1000 m. northward.
4. Velocity = $\frac{1000}{200}$ = 5 m/sec. northward.
5. Average speed = $\frac{2000}{200}$ = 10 m/sec.

4

(A) 1. b 2. c 3. b 4. a 5. a 6. a

(B) 1. It will reproduce by budding.
2. The defect will be corrected, where he can see near objects clearly.

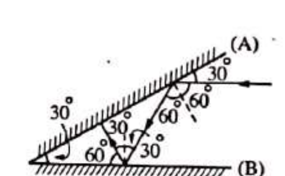
11 Behiera Governorate



(A) 1. The optical centre of the lens.
2. Vegetative reproduction.
3. Cataract. 4. A tetrad.
5. Deceleration. 6. The nebula.

(B) 1. Because the direction of wind affects the velocity of the plane, so affects also the time of the trip and the amount of the fuel consumed.
2. Because each of male gamete and female gamete contains half number of chromosomes (N), by combination a zygote is formed which containing the whole number of chromosomes (2 N).

(C) 1.



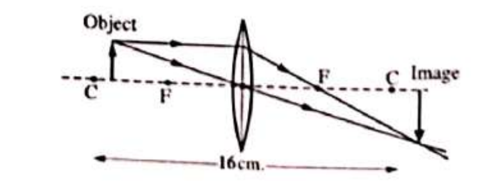
2. Reflecting angle from the mirror (B) = 30°



(A) 1. changeble. 2. 10 pairs
3. 80 4. Sporangia
5. Displacement. 6. Laplace

(B) 1. Its speed increases to the double.
2. It reflects back on itself.

(C)



- Image properties : real, inverted and equal to the object.



(A) 1. b 2. d 3. b 4. d 5. c 6. a

(B) 1. It forms an erect and smaller image for the way behind the car.

2. It forms the spindle fibers.

(C) 1. Distance = 60 + (60 – 20) = 100 m

$V = \frac{d}{t} = \frac{100}{10} = 10$ m/sec.

2. Displacement = 20 m $\overrightarrow{AC}$

Velocity $= \frac{\text{displacement}}{\text{time}} = \frac{20}{10} = 2$ m/sec.



(A) 1. vector – scalar

2. 25% – 75%

3. direction - measuring unit

4. red blood cells – liver cells

5. straight – curved

6. Solar telescope – Hubble telescope.

(B) 1. $a_1 = \frac{V_2 - V_1}{t_1} = \frac{10 - 0}{4} = 2.5 \text{ m/sec}^2$

$a_2 = \frac{V_2 - V_1}{t_2} = \frac{5 - 10}{2} = -2.5 \text{ m/sec}^2$

2. $t = \frac{V_2 - V_1}{a_2} = \frac{0 - 5}{-2.5} = 2$ sec.

(C) 1. 2 2. 3 3. 1 4. 3

12 Ismailia Governorate



(A) 1. nucleic acid – genetic information

2. vector – scalar

3. concave – convex

(B)

Nebular theory	Modern theory
Laplace	Fred Hoyle

(C)) 1. $a = \frac{V_2 - V_1}{t}$

$= \frac{25 - 0}{10} = 2.5 \text{ m/sec}^2$

2. Positive acceleration.

2

(A) 1. Average speed.

2. The amount of displacement.

3. Gametes. 4. Cataract.

5. Gravity of the Sun.

(B) 1. When the observer moves in opposite direction of the object.

2. When the body moves in straight line in one direction.

(C) 1. Budding

2. (1) The nucleus divided by mitosis to two nuclei, one of then remain and the other one migrates to the bud.

(2) The bud grow into new a fungus, that seperates or remain on the mother cell forming a colony.



(A) 1. velocity. 2. convex lens

3. centre 4. centrosome

5. changeble

(B) 1. Position (3) 2. Position (1)

3. Position (2)

(C) 1. It reflects back on itself.

2. Genetic variation.



(A) 1. c 2. c 3. a 4. b 5. b

(B) – Distance = 18 + 3 + 18 + 3 = 42 m.

– Displacement = zero

(C)) 1. Metaphase, which preceded by prophase.

2. Mitosis.

13 Suez Governorate



(A) 1. d 2. c 3. c 4. a 5. d

(B) 1. Mitosis. 2. Metaphase.

3. The chromosomes arranged at the cell equator, where each chromosome is connected from its centromere to the spindle fibers.

(C)

Positive acceleration	Negative acceleration
When the object's speed increases by equal values through equal periods of time.	When the object's speed decreases by equal values through equal periods of time.

2

(A) 1. Motion. 2. Universe.
3. Relative speed. 4. Reproductive cells.
5. Average speed.

(B) 1. Because it is identified by knowing both its amount and its direction.
2. A source of genetic variation.
3. Because the angle of incidence equals the angle of reflection equals zero.

(C) 1. If the arm contains a part of the central disc.
2. If they fall parallel to each others, and parallel to the principal axis.



(A) 1. centrifugal force. 2. plane mirror.
3. seeds 4. mitosis
5. irregular

(B) 1. Displacement = 5 × 2 = 10 m (to the east).
2. Distance = 10 m
3. Acceleration = zero

(C) 1. It is the combination of male gamete and female gamete to form zygote.
2. It is the line connects the two centers of curvature, passing through the optical center.



(A) 1. pollen grains.
2. Uniform acceleration
3. solar system 4. centromere
5. double

(B)

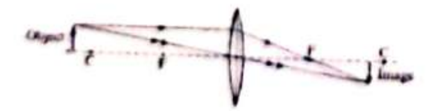


Image properties : real, inverted and diminished.

(C) Graphs (1) , (2).

14 Port Said Governorate



(A) 1. b 2. d 3. c 4. d

(B) 1. It is the speed of a moving object relative to an observer.
2. It is the combination of male gamete and female gamete to form a zygote.
3. It is the ability of the organism to compensate its missing parts by mitosis.

(C) $V_1 = 80$ m/sec $V_2 = ?$ $a = -2$ m/sec²

$t = 12$ sec

$$a = \frac{V_2 - V_1}{t}$$

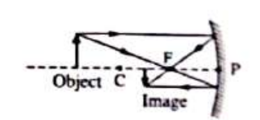
$$-2 = \frac{V_2 - 80}{12}$$

$V_2 = 56$ m/sec

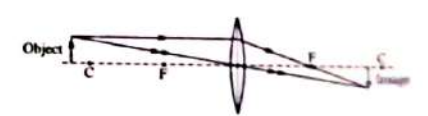
2

(A) 1. Straight - curved
2. converging – diverging
3. Laplace – Fred Hoyle
4. Pollen grains – ova

(B) 1.



2.



(C) 1. Answer by yourself.
2. To form two identical groups of chromosomes, each group migrates towards one of the cell's poles.



(A) 1. Focus 2. prophase
3. Milky Way 4. only

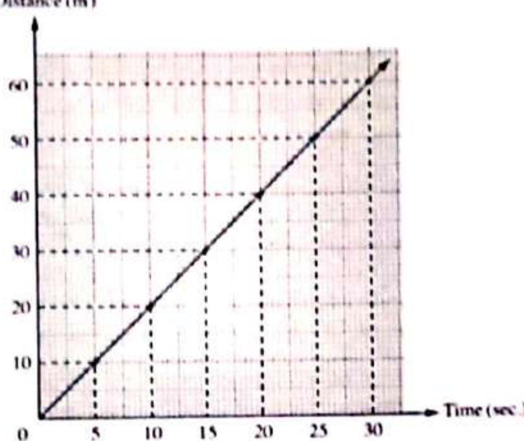
(B) 1. 23 chromosomes.
2. 23 pairs of chromosomes.

(C) 1. It's speed = $\frac{100}{2}$ = 50 km/h.
2. It's reflecting angle = 20°



(A) 1. Crossing over phenomenon.
2. The expansion of the universe.
3. Cataract.
4. Velocity.

(B) 1.



2. Velocity $= \frac{10}{5} = 2$ m/sec.

(C) 1.

Concave mirror	Convex mirror
Object put at a distance less than the focal length.	Object put at any distance.

2.

Binary Fission	Budding
Bacteria	Yeast

15 Fayoum Governorate

1

(A) 1. the galaxy – 100 000 million galaxies.

2. distance – $d = V \times t$
3. Optical centre – Focus.
4. nuclear membrane – prophase
5. straight – curved

(B) 1. It is the speed of a moving object relative to static or moving observer.

2. It is the combination of male gamete and female gamete to form a zygote.
3. It is the point of connection between two chromatids of the chromosome.

(C) $V_1 = 6$ m/sec. $V_2 = 12$ m/sec. $t = 3$ sec.

$$a = \frac{V_2 - V_1}{t}$$

$$= \frac{12 - 6}{3} = 2 \text{ m/sec}^2$$

2

(A) 1. c 2. a 3. c 4. c 5. b

(B) 1. Because the speed changes according to the road condition.

2. Because it forms virtual, erect and diminished image to the road behind the car.
3. Due to the occurance of crossing over phenomenon between the two inner chromatids of the tetrad.

(C) Distance = 15 + 30 + 15 = 60 m.

Displacement = 30 m.

Velocity $= \frac{\vec{d}}{t} = \frac{30}{30} = 1$ m/sec. (eastward)

3

(A) 1. Principal axis. 2. Acceleration

3. Nebula. 4. Irregular speed.

5. Gametes.

(B) 1. It reproduces by budding and forms a new fungus separated from the parental cell or remain connected to the parental cell forming a colony.

2. Its speed will be doubled.
3. No gametes will be formed.

(C)

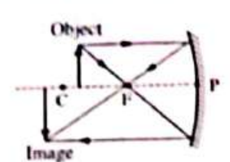


Image properties : real, inverted and magnified.

4

(A) 1. (✓) 2. (✓)

3. (✗) The pole is ...

4. (✗) ... shortest ... 5. (✓)

(B) 1. Prophase – Metaphase – Anaphase – Telophase.

2. Mitosis.

(C)

Long – shightedness	Short – shightedness
Convex lens	Concave lens

16 Beni-Suef Governorate

1

(A) 1. c 2. b 3. c 4. d 5. d

(B) 1. Its size contracted and its revolving speed around itself increased.

2. The amount of displacement = zero.
3. It reflects passing through the focus.

(C) 1. It is the point inside the lens on the principal axis in the mid distance between its two faces.

2. It is the combination of the male gamete and the female gamete to form a zygote.

2

(A) 1. Milky Way galaxy. 2. Focal length.
3. Relative speed. 4. Interphase.
5. Average speed.

(B) 1.

Hydra	Starfish
Budding	Regeneration

2.

Male gamete	Female gamete
Sperm	Ovum

3.

Virtual image	Real image
Upright	Inverted

(C) 1. $V = \frac{d}{t} = \frac{70}{5} = 14$ m/sec.

2. Velocity $= \frac{\text{displacement}}{\text{time}}$
$= \frac{50}{5} = 10$ m/sec. North east direction

3

(A) 1. behind 2. telophase
3. crossing over 4. zero

(B) 1. 20 m/sec^2 2. Negative
3. 2 sec. (BC).

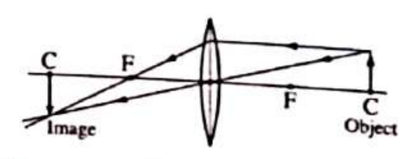
(C) 1. Two identical groups of chromatids are formed, each group migrates towards one of the cell's poles.
2. Chromosomes are arranged along the cell equator where each chromosome is attached with one of the spindle fibers at its centromere.



(A) 1. acceleration. 2. their vegetative organs.
3. Protein. 4. Fred Hoyle 5. 90

(B) 1. Because it is enough to identify its magnitude only.
2. Because it collects the rays, so the image of the near objects are formed on the retina.
3. Because asexual reproduction depends on mitosis, where the new individual gets a full copy of the parental individual's genetic traits.

(C) 1.



2. (a) 2 cm (b) 10 cm

17 Minia Governorate



(A) 1. d 2. c 3. b 4. d 5. b

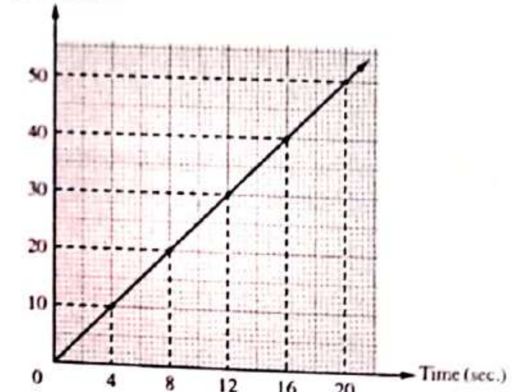
(B) 1. Interphase. 2. Befor mitosis division.
3. To prepare the cell for division process, by duplicating the genetic material.

(C) 1. It is a disease that causes a difficulty of vision as a result of the darkness of the eye lens.
2. It is the acceleration by which an object moves in a straight line when its speed changes by equal values through equal periods of time.



(A) 1. 40 km/h – the same
2. cooling 3. concave – convex
4. nucleic acid (DNA) – protein

(B) 1.



2. $V = \frac{d}{t} = \frac{10}{4} = 2.5$ m/sec.

(C) 1. It reflects upon itself.
2. It will form a new fungus.
3. It will form and equal image, so the driver cannot see the whole road behind the car.

3

(A) 1. Long-sightendness.
2. Velocity. 3. Light year.
4. Crossing over phenomenon.
5. Universe.

(B) 1.

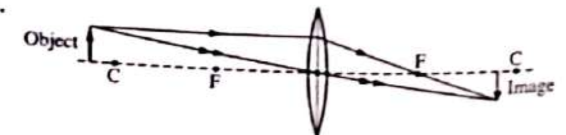


Image properties : real, inverted and diminished.

(C) 1.

Sexual reproduction	Asexual reproduction
Gives an individual carries a new genetic traits.	Gives an individual carries the same genetic traits of the parent individual.

2.

Scalar physical quantity	Vector physical quantity
It is the physical quantity that has magnitude only and has no direction.	It is the physical quantity that has magnitude and direction.

4

(A) 1. speedometer

2. Pole of the mirror

3. metaphase

4. spiral

(B) $V_1 = 20$ m/sec. $V_2 = 0$ $a = -4$ m/sec^2 $t = ?$

$$t = \frac{V_2 - V_1}{a}$$

$$= \frac{0 - 20}{4} = 5 \text{ sec}$$

(C) 1. Because it is a virtual image.

2. Because the wind direction affect the velocity of the plane, and so the amount of fuel consumed.

(D) Answer by yourself.

18 Assiut Governorate

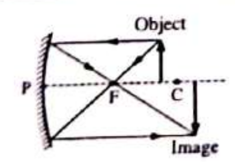


(A) 1. c 2. b 3. c 4. a 5. c 6. a

(B)

Sexual reproduction	Asexual reproduction
The new individual with traits differ from their parents.	The new individual with traits identical to those of the parent.

(C) 1.



2. Image properties : real, inverted and magnified.

2

(A) 1. The pole of the mirror.

2. spiral

3. long-sightedness.

4. prophase

5. zero

(B) 1. It will reflected by angle = 60° from the plane mirror.

2. Its size decrease, and its revolving around itself increase.

(C) 1. Mitosis.

2. Metaphase.

3. The chromosomes which are connected with the spindle fibers are arranged at the cell equator.

3

(A) 1. Meiosis.

2. Average speed.

3. The principal axis.

4. Milky Way galaxy.

5. Interphase.

(B) 1. The distance between the focus and the pole of the mirror equals 7 cm.

2. The speed of the object is changed by 10 m/sec. each one second.

(C) 1. Both bodies are moving with a regular speed.

2. The body (A) is faster than the body (B), because it cover the same distance (6 m) in a shorter period of time (3 sec.).

3. $V = \frac{d}{t} = \frac{6}{3} = 2$ m/sec.

4

(A) 1. (✗) ... Chamberlain and Moulton.

2. (✓)

3. (✗) ... mass.

4. (✗) ... virtual.

5. (✓)

(B) 1. Because the refracted light rays are parallel and never intersect.

2. Due to the continous separation between galaxies in the space as a result of their regular movement.

(C) Answer by yourself.

19 Sohag Governorate

1

(A) 1. distance – time

2. scalar – magnitude

3. equal – perpendicular

4. universe – solar system.

5. binary fission – simple algae.

(B) 1. $a = \frac{V_2 - V_1}{t}$

$$= \frac{25 - 0}{10} = 2.5 \text{ m/sec}^2$$

2. Positive acceleration.

(C) 1. It occurs in most higher living organisms through two living organisms, one of them is male and the other is female.

2. The point of collection of to refracted light rays.

3. A cell that produced due to fertilization, and it contains the complete number of chromosomes of the living organism.



2

(A) 1. First law of light reflection.

2. Nucleus.

3. Vegetative reproduction.

4. Milky Way galaxy. 5. Distance.

(B) 1. Due to the condition of the road and traffic.

2. Because the male gamete (N) combines with the female gamete (N) to produce a zygote (2 N).

3. Because lens has two spherical surfaces, and mirror has one spherical surface.

(C) 1. Velocity $= \frac{\text{total distance}}{\text{total time}} = \frac{80}{80} = 1$ m/sec.

2. $\overline{V} = \frac{\text{total distance}}{\text{total time}} = \frac{40 + 80 + 40}{35 + 20 + 25} = \frac{160}{80}$

$= 2$ m/sec.

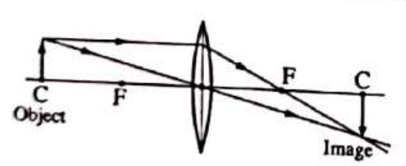


3

(A) 1. prophase 1. 2. Regular speed

3. nuclear. 4. 10 m/sec.

(B) 1.



2. Image properties : real, inverted and equal to the object.

(C) 1. The spindle fibers not formed, there for the cell division doesn't completed.

2. Its displacement = zero.

3. It reflects back on itself.



4

(A) 1. b 2. b 3. b 4. d

(B) 1.

Long - sightedness	Short - sightedness
The image formed behind the retina.	The image formed in front of the retina.

2.

Mitosis division	Meiosis division
produces 2 cells.	produces 4 cells.

3.

Crossing star theory	Modern theory
Chamberlain and Moulton.	Fred Hoyle.

(C) 1. Mitosis 2. Metaphase.

3. Growth of the living organisms and compensation of the damaged cells.

20 Qena Governorate



1

(A) 1. a 2. c 3. d 4. b 5. a 6. d

(B) 1. It is the point in the middle of its reflecting surface.

2. It is the combination between male gamete (N) and female gamete (N) to produce a zygote (2 N).

(C) $V_1 = 50$ m/sec $V_2 = ?$ $a = -2$ m/sec^2 $t = 12$ sec

$$a = \frac{V_2 - V_1}{t}$$

$$-2 = \frac{V_2 - 50}{12}$$

$$-24 = V_2 - 50$$

$$V_2 = 26 \text{ m/sec.}$$

2

(A) 1. Crossing star. 2. distance.

3. nucleic acid (DNA) – protein

4. 12000 million 5. outer

6. scalar

(B) 1. The total distance covered during one hour equals 60 km.

2. The angle between the reflected light ray and the normal equals 40°.

(C) 1. Metaphase.

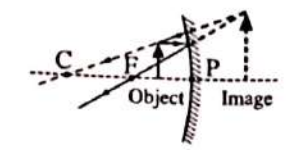
2. The chromosomes which are connected with the spindle fibers are arranged at the cell equator.

3

(A) 1. (✓) 2. (✗) 3. (✓)

4. (✓) 5. (✗) 6. (✗)

(B) 1.



2. Image properties ; virtual, erect and magnified.

(C) 1. Forming spindle fibers during cell division.

2. They produce the galaxies, stars and universe through millions of years.



(A) 1. Relative speed. 2. Nebula.
3. principal axis. 4. Regeneration.
5. Gravity. 6. Velocity.

(B) 1.

Uniform speed	Non - uniform speed
It is the speed by which the object moves when it covers equal distances at equal periods time.	It is the speed by which the object moves when it covers unequal distances at equal periods of time.

2.

Thick convex lens	Thin convex lens
It has a small focal length.	It has a large focal length.

(C) 1. Due to the occurance of crossing over phenomenon during the formation of gametes, and also the offspring resulted gets his genetic traits from two sources (the male and the female).

2. Because it diverges the rays coming from far objects before falling on the eye, so the image is formed exactly on the retina.

21 Luxor Governorate



(A) 1. regular 2. larger than
3. regeneration. 4. the Sun.
5. tumor.

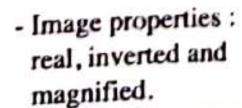
(B) 1. Its speed decreases to quarter.

2. The variation of genetic traits don't occur among the individuals of the same species.

3. Passes without refraction.

(C) - Tht image at a distance greater than 15 cm

- Image properties : real, inverted and magnified.



2

(A) 1. a 2. b 3. c 4. b 5. d

(B) $t_1 = \frac{d_1}{v_1} = \frac{30}{3} = 10$ sec.

$t_2 = \frac{d_2}{v_2} = \frac{120}{6} = 20$ sec.

$V = \frac{d_1 + d_2}{t_1 + t_2} = \frac{30 + 120}{10 + 20} = 5$ m/sec.

(C) 1. Because it produces new individuals identical in genetic structure to the parental individual by mitotic division.

2. Because distance is directly proportional with time when the object moves with a constant speed.

3

(A) 1. Motion. 2. Real focus.
3. Sporangia.
4. Star explosion phenomenon.
5. Fertilization.

(B) 1. At the focus.

2. Because the refracted light rays from the lens are parallel and don't intersect.

(C) 1. Mitosis in stem cell and meiosis in ovary cell.

2. Sexual reproduction.

3. In stem cell : 8 pairs.
In ovary cell : 4 pairs.



(A) 1. Concave mirror 2. Big Bang theory.
3. reproductive cells. 4. equal to
5. speedometer.

(B) 1. Displacement = $8 + \left(\frac{1}{2}\text{ circumference}\right) + 7$

$= 8 + \left(\frac{1}{2} \times 2 \times \frac{22}{7} \times 7\right) + 7 = 37$ m

2. Displacement = 8 + 7 = 15 m (east direction).

Velocity = $\frac{\text{displacement}}{\text{time}} = \frac{15}{5} = 3$ m/sec. (east direction)

(C) 1.

Reproductive cell	Gamete
Meiosis division	Doesn't divide

2. Answer by yourself.



Aswan Governorate



(A) 1. convex 2. zero.
3. nebular. 4. centrosome.

(B) 1. Budding.

2. Reproduction by regeneration.

(C) $V_1 = 80$ m/sec $a = -2$ m/sec^2 $t = 12$ sec $V_2 = ?$

$$a = \frac{V_2 - V_1}{t}$$

$$-2 = \frac{V_2 - 80}{12}$$

$V_2 = 56$ m/sec



(A) 1. d 2. b 3. c 4. a

(B) 1. Because the relative speed equals the difference between the two speeds equals zero.

2. Because the refracted light rays are parallel and don't intersect.

(C) 1. Carries the genetic information of the living organism.

2. Measures the speed of the car directly.



(A) 1. Displacement.

2. Vegetative reproduction.

3. Big Bang theory.

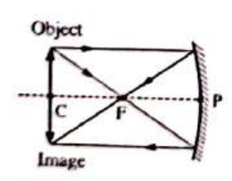
4. Zygote.

(B) 1. It passes without refraction.

2. Its speed decreases to half.

(C)







(A) 1. virtual. 2. scalar

3. Sun 4. metaphase

(B) 1. If the object moves with a regular speed.

2. If the incident light ray falls perpendicular to the plane mirror.

(C) 1. Crossing over phenomenon.

2. Prophase I 3. Meiosis.

4. It works on the variation of genetic traits amoung the members of the same species.

23 Red Sea Governorate

1

(A) 1. Centromere. 2. Velocity.

3. Light year. 4. Regeneration.

5. Secondary axis.

(B) 1. An equal image will be formed, and the driver cannot see the whole street behind the car.

2. Its acceleration equal zero.

3. Expansion of the universe.

(C) $V_1 = 130$ m/sec $a = -5$m / sec^2 $V_2 = ?$ $t = 20$ sec

$$a = \frac{V_2 - V_1}{t}$$

$$-5 = \frac{V_2 - 130}{20}$$

$V_2 = 30$ m/sec.



(A) 1. Meiotic – reproductive

2. pole – center of curvature

3. hydrogen – helium.

4. 25 – 5

(B) 1. observer 2. budding

3. nebular 4. The optical center

(C) 1. 44 2. 44 3. 22



(A) 1. To prepare the cell for division, by occurance of some biological processes, and duplicating the amount of the genetic material (DNA).

2. Answer by yourself.

3. Due to nuclear reaction.

4. Answer by yourself.

(B) 1. It is the combination of male gamete (N) and female gamete (N) to form a zygote (2N).

2. It is the exchange of some parts of the genetic materials between the two inner chromatides of the tetrad.

3. Its focal length equals 20 cm.

(C) 1. 44 chromosomes. 2. 44 chromosomes.

3. 22 chromosomes.



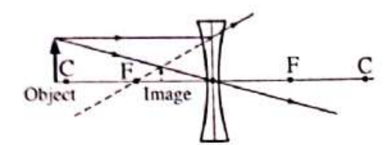
(A) 1. c 2. d 3. a 4. b 5. a 6. c

(B) - Asexual reproduction gives individuals identical to the parent individual, because it depends on mitosis.

- Sexual reproduction gives individuals combine genetic traits of both male and female individuals, because it depends on meiosis.

(C) 1. Concave lens.

2.





North Sinai Governorate

1

(A) 1. the center of curvature – the pole.
2. gametes formation – Fertilization.
3. hydrogen – helium.
4. vector – scalar

(B) 1. Because it moves in straight line or curved line or combination of both.
2. Because it occurs to reproductive cells (2N) and produces gametes (N).

(C) 1. At its Focus.
2. Because the refracted rays of the lens are parallel and don't intersect.

2

(A) 1. c 2. c 3. c 4. b 5. b 6. a

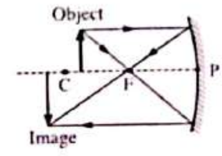
(B) 1, 2. Answer by yourself

3

(A) 1. zero. 2. at constant speed.
3. prophase. 4. velocity
5. Milky Way

(B) 1. metaphase – mitosis
2. Because the chromosomes which are connected with the spindle fibers are arranged at the cell equator.
3. Anaphase.

(C)



- Image properties : real, inverted and magnified.

4

(A) 1. Average speed. 2. Nebula.
3. Regeneration. 4. Virtual image.

(B) 1. Short-sightedness.
2. The cell can not divided.

(C) 1. Total distance = 10 + 10 = 20 m.
2. Velocity $= \frac{10}{5} = 2$ m/sec.

25 South Sinai Governorate

1

(A) 1. Centromere. 2. optical center.
3. Solar system. 4. Regeneration.
5. Velocity.

(B) 1. Figure (2).
2. Figure (1) is mitosis.
Figure (2) is meiosis.

(C) $t = \frac{d}{v} = \frac{200}{40} = 5$ hours
Time of arival = 6 + 5 = 11 am



(A) 1. Because it depends on mitosis division.
2. Due to the condition of the road and the traffic.
3. Because mass is fully defined by knowing its magnitude only, while force it is identified by knowing its magnitude and direction.

(B) Axis (1) is time axis.
Axis (2) is speed axis.

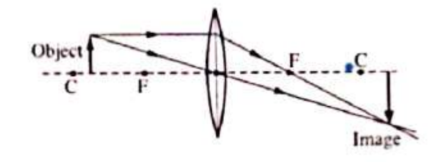
(C) 1. equal to 2. zygote
3. inverted 4. light reflection

3

(A) 1. c 2. d 3. d 4. d 5. b

(B) 1. This star attracted the Sun to it, leading to a great expansion in the part of the Sun facing it.
2. Short-sightedness.

(C)



- Image properties : real, inverted and magnified.

4

(A) 1. (✗) 2. (✗) 3. (✓) 4. (✗) 5. (✗)

(B) 1. $a = \frac{V_2 - V_1}{t}$

$\frac{10}{t} = \frac{V_2 - zero}{t}$

$V_2 = 10$ m/sec.

2. positive acceleration.

(C) 1. Detect the speed directly.

2. Carries the genetic traits of the individuals.

26 The New Valley Governorate



(A) 1. c 2. b 3. b 4. c

(B) 1. kg

2. m/sec in a certain direction.

(C) 1. Real, inverted and equal to the object.

2. Distance = 12 + 12 + 12 + 12 = 48 cm

2

(A) 1. long-sightedness – convex lens.

2. distance – time.

3. centrosome – cytoplasm.

4. two chromatids – centromere.

(B) 1, 2. Answer by yourself.

(C) a. Mitosis.

b. No, because each one of the produced cell has a complete number of chromosomes of the parent cell.



(A) 1. Relative speed. 2. Distance.

3. Interphase. 4. Real focus.

(B) 1. It measures the speed directly.

2. It carries the genetic traits of the individual.

(C) 1. (a) $a = \frac{V_2 - V_1}{t} = \frac{10 - zero}{4} = 2.5 \text{ m/sec}^2$

(b) $a = \frac{V_2 - V_1}{t} = \frac{5 - 10}{2} = -2.5 \text{ m/sec}^2$

2. $t = \frac{V_2 - V_1}{a} = \frac{zero - 5}{-2.5} = 2$ sec.

4

(A) 1. eye cornea 2. nuclear

3. bread mould fungus. 4. double.

(B) 1. Because they need mitosis, which is important for growth and replace the damaged cells.

2. Because the convex lens is a collecting lens, while the concave lens seperats the light rays fall on it.

3. Because the relative speed equals the difference between the two speeds equals zero.

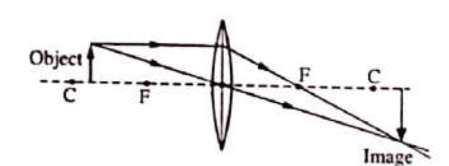
(C) Answer by yourself.

27 Matrouh Governorate

1

(A) 1. b 2. c 3. c 4. c 5. b

(B)



- Image properties : real, inverted and magnified.

(C) 1. It is a type of asexual reproduction that takes place in plants' vegetative organs without the need of seeds

2. It is the straight line that passes by the pole of the mirror (p) and its center of curvature (c).



(A) 1. Meiosis. 2. Galaxy.

3. Relative speed. 4. Optical center.

5. Motion. 6. Long-sightedness.

(B) 1. $V = \frac{50 + 100 + 50}{30 + 60 + 10} = 2$m/sec.

2. Velocity $= \frac{100}{100} = 1$ m/sec. (east direction).

(C) 1.

Budding	Regeneration
Yeast	Starfish

2.

Real image	virtual image
can be received on a screen.	can not be received on a screen.

3

(A) 1. sporogony.

2. cytoplasm condensation.

3. no image.

4. 4 m/sec^2

5. displacement.

(B) The rearrangement is : 4 ⟶ 2 ⟶ 1 ⟶ 3

(C) 1. It reflects on itself.

2. The planets will move freely in the space.

3. The body moves with positive acceleration.

4

(A) 1. Because they have magnitude and direction.

2. Because the lens has two spherical surfaces, but the mirror has one spherical surface.

3. Because it depends on meiotic division, and due to the occurance of crossing over phenomenon.

4. Because the relative speed equals the difference between the two speeds equals zero.

(B) 1. Metaphase – Mitosis.

2. The chromosomes which are connected with the spindle fibers are arranged at the cell equator.

(C) 1. 10

2. hydrogen and helium.

3. four

4. Distance

1 Cairo Governorate



(A) 1. Vector – scalar   2. spiral

3. mitosis – meiosis

(B) 1. It is the point inside the lens lies on the principal axis in the mid distance between its two faces.

2. It is the speed of an object when covers equal distances at unequal periods of time, or covers unequal distances at equal periods of time.

3. It is the combination between male gamete and female gamete to form zygote.

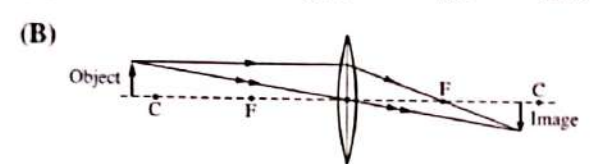
(C) Acceleration (a) $= \frac{V_2 - V_1}{\Delta t} = \frac{12 - \text{zero}}{4} = 3 \text{ m/sec}^2$

The type of acceleration is positive acceleration.



(A) 1. c   2. b   3. d   4. d   5. b

(B)



The properties of the formed image :
– real, inverted and diminished.

(C) 1. Due to elongation of the eyeball, or the surface of the eye lens is more convex.

2. Because asexual reproduction depends on mitotic division, where the new offspring gets a full copy of the parental individual's genetic traits.



(A) 1. protein   2. 10

3. prophase 1   4. Fred Hoyle

5. same   6. diverges

(B) 1. The starfish arm could be reproduce by regeneration and give out a complete animal.

2. It will reflect passing through the focus.

(C) 1. Kilogram or gram

2. m/sec. or km/h. (in a certain direction)



(A) 1. Average speed. 2. Uniform acceleration.

3. Universe.   4. Reproduction.

5. Speed.   6. Angle of incidence.

(B) 1.

Distance	Displacement
The actual length of the path that a moving object takes from the start point of movement to the end point.	The length of the shortest straight line between two positions.

2.

Real image	Virtual image
It is the image which can be received on a screen.	It is the image which cannot be received on a screen.

2 Giza Governorate



(A) 1. centre.   2. amoeba.

3. parallel to the principal axis.

4. scalar.

(B) 1. Because its regular speed doesn't change as time passes (ΔV = zero).

2. To form two identical groups of chromosomes at each pole of the cell.

(C) Pollen grain : Formed in plant anthers.

Sperm : Formed in human testes.

2

(A) 1. c   2. b   3. d   4. b

(B) 1. When the object placed at the centre of curvature of the concave mirror.

2. When the object moved in a straight line at certain direction.

(C) Actual speed = relative speed – observer's speed.

= 80 – 30

= 50 km/h



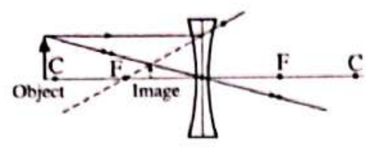
(A) 1. Nebular theory.   2. DNA.

3. Convex mirror.   4. Velocity.

(B) 1. The arrangement of homologous pairs of chromosomes, where each pair consists of 4 chromatids.

2. It is the distance between the principal focus and the optical centre of the lens.

(C) 1.



2. The properties of the formed image : virtual, erect and diminished.



(A) 1. nuclear. 2. bread mould fungus.

3. convex lens 4. 80

(B) 1. The speed of the car = $\frac{100}{2}$ = 50 km/h

2. It is the cell produced from fertilization and it contains the complete number of chromosomes of the living organism.

(C) Time (t) = $\frac{V_2 - V_1}{a} = \frac{\text{zero} - 30}{-3}$ = 10 sec.



Alex. Governorate



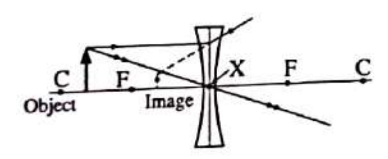
(A) 1. Milky Way

2. mass – acceleration.

3. spindle fibers

4. inner chromatids of the tetrad

(B) 1.



2. The optical centre

(C) 1. Fusion of male gamete and female gamete to form the zygote.

2. It is the radius of the sphere that the mirror is a part of it.



(A) 1. d 2. b 3. b 4. a

(B) 1. They are collected at the focus (real focus).

2. The pollen grains will produced inside the anther, the ovules will produced inside the ovary.

(C) 1. Anaphase. 2. Prophase.



(A) 1. Galaxy. 2. Regeneration.

(B) 1. Fourth - 40

2. Acceleration (a) = $\frac{V_2 - V_1}{t} = \frac{40 - 0}{4}$ = 10 m/sec^2

(C)

P.O.C	Long-sightedness	Short-sightedness
Concept :	Seeing the far objects clearly but the close objects are not seen clearly.	Seeing the close objects clearly but the far objects are not seen clearly.
Treatment :	By using convex lens.	Busing concave lens.



(A) 1. binary fission

2. at a distance smaller than the focal length.

(B) 1. To release the spores and fall on suitable environment to start growing and produce new organism.

2. Due to the formation of hydrogen and helium gasses.

(C) 1. Figure (1).

2. The distance between the object and the mirror is not equal the distance between the image and the mirror - the image is inverted not upright.

4

Kalyoubia Governorate

1

(A) 1. Centromere.

2. Secondary axis of the lens.

3. Radius of curvature of the mirror.

4. Solar system.

5. Irregular speed.

(B) 1. The value of displacement = 5 m

2. The speed of moving object with respect to stationary or moving observer.

3. Net of fibers extends between the two poles of the animal cell.

(C) 1. The displacement = 40 – 10 = 30 m. To the south.

2. $V_{(ab)} = \frac{10}{2}$ = 5 m/sec.

$V_{(bc)} = \frac{30}{10}$ = 3 m/sec.

$V_{(cd)} = \frac{40}{8}$ = 5 m/sec.

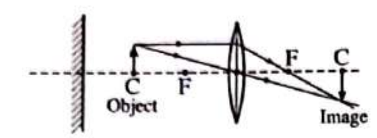
$V_{(de)} = \frac{30}{5}$ = 6 m/sec.

∴ The person moves with the least possible speed in the part (bc).



(A) 1. b 2. d 3. a 4. a 5. d

(B) 1.



2. The distance between the two images
$= 12 + 12 + 8 + 8 = 40$ cm.

(C) 1. Mitosis. 2. Metaphase.

3. – The growth of living organism.
– The compensation of the damaged cells.



(A) 1. (✗) 2. (✓) 3. (✗) 4. (✗) 5. (✗)

(B) 1. Because it reduces the number of chromosomes to the half in each one of the produced cells (gametes).

2. Because liver cells divide by mitosis to compensate the damaged part.

(C) 1. $\text{Velocity} = \frac{\text{displacement}}{\text{time}} = \frac{\text{zero}}{1} = \text{zero}$

2. $\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$
$= \frac{80}{1} = 80$ km/h.



(A) 1. Pollen grain do not formed and the sexual reproduction does not take place.

2. The speed of the moving object decreased to the half.

3. The shape of galaxy is changed.

4. The gold molecules absorb light energy and change it to heat leading to burn and kill the cancer cells.

5. The ray reflects on itself.

(B) 1. Virtual, erect and diminished image always formed.

2. Virtual, erect and magnified image is formed at the same side of the object.

3. No image is formed.

(C) 1. $(a)_1 = \frac{V_2 - V_1}{t} = \frac{10 - 0}{4} = 2.5 \text{ m/sec}^2$

$(a)_2 = \frac{V_2 - V_1}{t} = \frac{5 - 10}{2} = -2.5 \text{ m/sec}^2$

2. $t = \frac{V_2 - V_1}{a} = \frac{0 - 5}{-2.5} = 2 \text{ sec.}$